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ENGINEERING EVALUATION/COST ANALYSIS REPORT (EE/CA)

FOR

EVERGREEN MANOR GROUNDWATER CONTAMINATION SITE

WINNEBAGO COUNTY, ILLINOIS

OCTOBER 1998

1. Executive Summary

The Engineering Evaluation/Cost Analysis (EE/CA) for the Evergreen Manor site has been prepared by the United States Environmental Protection Agency (U.S. EPA) Region 5. The Evergreen Manor site is an area of groundwater contamination in the Evergreen Manor subdivision, Hononegah Heights subdivision, Olde Farm subdivision and possibly the Tresemer subdivision located approximately 1.5 miles northwest of the Village of Roscoe in Winnebago County, Illinois. Residential wells in the site area provide drinking water.

The shallow sand and gravel aquifer is the major source of groundwater in the area and is encountered at depths of 35 feet. Well logs indicate the majority of the residential wells obtain water from the sand and gravel aquifer approximately 50 feet to 80 feet below ground surface. The direction of ground water flow is in a south/southwest direction.

Groundwater contamination has prompted the Illinois Environmental Protection Agency (IEPA), the Illinois Department of Public Health (IDPH), and U.S. EPA to conduct investigations of the site. Residential well samples from the Evergreen Manor site area have shown 1,1-dichloroethene, cis-1,2-dichloroethene, 1,1-dichlorethane, 1,1,1-trichloroethane, trichloroethene (TCE), tetrachloroethene (PCE), and 1,1,2-trichloroethane. In many residential wells, TCE concentrations and to a lesser extent PCE concentrations, exceeded the maximum contaminant level (MCL - the maximum allowable concentration of a substance in a public drinking water supply) standard of 5 micrograms/liter (ug/l) set forth by the U.S. EPA Office of Water, under the drinking water regulations and health advisories.

According to IDPH personnel, contamination at the site was initially discovered in November 1990 when a lending institution required a local homeowner to sample the home's water supply. Analysis of the well water revealed elevated levels of volatile organic compounds at concentrations above MCLs.

In 1992, the Illinois Environmental Protection Agency ("IEPA") conducted a CERCLA Screening Site Inspection of the site. During the course of this site inspection, 39 soil gas samples and 4 groundwater samples were collected in the area to the northeast of the identified plume in order to gain information that might lead to the identification of possible sources of the groundwater contamination. The samples were analyzed for 1,1,1-trichloroethane, TCE, and 1,1-dichloroethene. The data revealed that the plume extends beyond Hononegah Heights Subdivision to the northeast toward Rockton Road.

In 1993, IEPA conducted a CERCLA Expanded Site Inspection for the Evergreen Manor Groundwater Contamination site. Groundwater samples were collected during two separate sampling events, the first being November 9 and 10, 1993, and the second being November 15 and 16, 1993. A total of 49 groundwater samples were collected from 45 private wells in the site area (4 duplicate samples were collected). Laboratory analysis of the samples collected from the private wells in the plume area revealed the presence of 1,1,1-trichloroethane ranging in concentrations from less than 10 parts per billion (ppb) to 37 ppb, and TCE ranging in

concentration from less than 10 ppb to 40 ppb. Other compounds found below 10 ppb are acetone, 1,1-dichloroethene, 1,1-dichloroethane, 1,2-dichloroethene, and PCE. All samples collected (excluding 2 background samples) contained one or more of these compounds.

In order to further define the plume and its source(s), between December of 1993 and February of 1995, the IEPA installed and sampled a total of 24 ground water monitoring wells in the area. When the wells were sampled in March of 1994, TCE was detected above the MCL in 2 of the 20 wells sampled and PCE was detected above the MCL in two other wells. In February of 1995, IEPA sampled all 24 groundwater monitoring wells. TCE was detected above the MCL in three wells, including the original two wells from the 1994 sampling event. PCE was detected above the MCL in four wells, including the original two wells from the 1994 sampling event.

Between December of 1990 and March 1994, IEPA and IDPH sampled the drinking water wells at 267 locations in and around the Evergreen Manor site. The large majority of these locations were homes within the four previously mentioned subdivisions. These results identified 108 locations that had contamination in their drinking water above MCLs and 203 locations that were impacted.

Since 1990, the IDPH has been collecting a limited number of residential well samples on an annual basis. Contaminant concentrations detected above MCLs include TCE and PCE. Concentrations of TCE within the plume area have ranged from a high of 75 ppb in 1990 to a high of 22 ppb in 1996. Concentrations of PCE within the plume area have ranged from a high of 2.7 ppb in 1991 to a high of 5.1 ppb in 1996. TCE concentrations appear to be decreasing over time while PCE concentrations are increasing.

A preliminary risk assessment has identified the ingestion of TCE, PCE and 1,1-dichloroethene through drinking water from affected private wells as the primary exposure pathway of concern. TCE and PCE concentrations in residential drinking water wells are above MCLs. The continuing usage of water from residential wells poses a threat to public health and the environment.

The Evergreen Manor site EE/CA report evaluated removal action objectives and removal action alternatives. Removal actions are usually short-term response actions taken to abate or mitigate imminent substantial threats to human health and the environment. As a result of the short-term nature of these actions, CERCLA, as amended by the Superfund Amendments and Reauthorization Act (SARA), sets $2 million and 12 month limits on Trust Fund-financed removal actions. The objective of this removal action is to address the primary concern identified at the site which is exposure to TCE, PCE and 1,1-dichloroethene. Secondary concerns involve the potential migration of the contaminant plume and environmental affects. U.S. EPA intends to investigate these concerns during the Remedial Investigation/Feasibility Study (RI/FS) phase of the remedial process to be conducted at a later date.

Three alternatives have been evaluated to abate the primary concern; a water supply alternative and two treatment alternatives. The water supply alternative option discussed is the North Park Public Water District. Treatment alternative options discussed include point-of-entry residential treatment with carbon filters and point-of-use residential treatment with carbon filters. All three options abate threats to human health. Each alternative was evaluated for its effectiveness, implementability and cost. A comparison of these alternatives is presented in Table 3. Estimated costs for the various alternatives range from $154,000 for the point-of-use drinking water filters to $1,900,000 for connecting residences to the North Park Public Water District.

2. Site Characterization

2.1 Site Description and Background

The Evergreen Manor Groundwater Contamination Site (Site) is located approximately 1.5 miles northwest of Roscoe, Illinois in Winnebago County. The Site is currently defined by the areal extent of groundwater contamination in the region. The investigations conducted at the Site have identified a plume of contaminated groundwater extending from an area on Rockton Road just east of Highway 251, to Tresemer, Olde Farm, Evergreen Manor, and the Hononegah Heights subdivisions. Property within the Site is owned by numerous entities which include businesses, the State of Illinois, and private homeowners. The area surrounding the subdivisions consists of agricultural, industrial and additional residential properties.

In 1990, it was discovered that residential wells in the Evergreen Manor subdivision were contaminated with various organic compounds. Subsequent groundwater sampling showed that additional residential areas were affected, and a narrow plume of groundwater contamination was identified.

2.1.1 Site Location and Physical Setting

The Evergreen Manor Groundwater Contamination Site consists of the residential areas of Evergreen Manor subdivision, Hononegah Heights subdivision, Olde Farm subdivision and possibly the Tresemer subdivision (see Figures 1 and 2). These residential subdivisions are located along Hononegah Road approximately 1.5 miles northwest of the Village of Roscoe in Winnebago County, Illinois, in the west ½ of Section 29 and the East ½ of Section 30, Township 46 North, Range 2 East. Hononegah Heights subdivision is located north of Hononegah Road while the other three subdivisions are located south of Hononegah Road.

The area surrounding the residential subdivisions is a mixture of residential, farm land and industry. Hononegah Forest preserve is to the west, Rock River is to the south, Hononegah Country Estates subdivision and some agricultural fields are to the east and agricultural land is to the north. A gravel pit and concrete mixing facility are located approximately one-half (½) mile to

the northeast and about one and one-half (1 ½) miles further to the northeast are a few scattered industries and a small industrial park.

2.1.2 Site History

Information collected from review of aerial photographs and plat maps indicate that the area was used as farmland prior to development into residential subdivisions. The subdivisions were developed in the following order: Hononegah Heights between 1940 and 1964, Tresemer subdivision between 1972 and 1974, Olde Farm subdivision between 1976 and 1979 and Evergreen Manor subdivision between 1986 and 1988. However, most of the development, excluding the Evergreen manor area, occurred in the late 1970's and the early 1980's.

According to IDPH personnel, contamination at the site was initially discovered in November of 1990, when a lending institution required a local homeowner to have the home's private water supply analyzed. The analysis of the well water revealed elevated levels of volatile organic compounds. The IDPH, together with U.S. EPA, then began sampling other residential wells in the area and discovered a narrow plume of contamination extending from Hononegah Heights subdivision south-southwest into the Evergreen Manor subdivision. Contaminants present included: 1,1-dichloroethene, cis-1,2-dichloroethene, 1,1-dichloroethane, 1,1,1-trichloroethane, TCE, PCE, and 1,1,2-trichloroethane. Concentrations ranged from less than 1 ppb to over 60 ppb. In some cases MCLs were exceeded. Numerous samples exceeded the MCL of 5 ppb TCE, while one sample exceeded the MCL of 7 ppb 1,1-dichloroethene. These concentrations, however, were below U.S. EPA Emergency Removal Action Levels for drinking water supplies.

In 1992, the Illinois Environmental Protection Agency ("IEPA") conducted a CERCLA Screening Site Inspection of the site. During the course of this site inspection, 39 soil gas samples and 4 groundwater samples were collected in the area to the northeast of the identified plume in order to gain information that might lead to the identification of possible sources of the groundwater contamination. The samples were analyzed for 1,1,1-trichloroethane, TCE, and 1,1-dichloroethene. The data revealed that the plume extends beyond Hononegah Heights Subdivision to the northeast toward Rockton Road (see Appendix A.1).

In November 1993, IEPA conducted an expanded site inspection at which time a total of 49 private well samples were collected from the Evergreen Manor, Olde Farm, and Hononegah Heights subdivisions. The samples, which were analyzed for volatile organic compounds, were found to contain the following contaminants: acetone, 1,1-dichloroethene, 1,2-dichloroethene (total), 1,1-dichloroethane, 1,1,1-trichloroethane, TCE, and PCE (see Appendix A.2). Of these seven compounds, five (acetone, 1,1-dichloroethene, 1,1-dichloroethane, 1,2-dichloroethene, and PCE) were found to be present at levels below the contract required detection limits. TCE was found at concentrations ranging from less than 10 ppb to 40 ppb, and 1,1,1-trichloroethane ranged from less than 10 ppb to 37 ppb.

Between December 1990 and March 1994, IEPA and IDPH sampled the drinking water wells at 267 locations northwest of Roscoe, Illinois. The large majority of these locations were residential homes within the four previously mentioned subdivisions. The results identified 108 locations that had drinking water above MCLs and 203 locations that were impacted (see Figure 7 and Appendix A.2).

Between December of 1993 and February of 1995, IEPA installed and sampled 24 groundwater monitoring wells in the area (Figure 6). When the wells were sampled in March of 1994, 2 of the 20 wells had TCE and PCE concentrations above the MCL. In February of 1995, IEPA sampled all 24 groundwater monitoring wells and three wells had TCE concentrations above the MCL and four wells had PCE concentrations above the MCL (see Appendix A.3 for a summary of these sampling results).

On May 22, 1998, U.S. EPA sampled 12 residential wells. Six wells had TCE concentrations above the MCL and three wells had PCE concentrations above the MCL (see Appendix A.4).

2.1.3 Geology/Hydrology/Hydraulics

The geology of the Roscoe, Illinois area is dominated by a bedrock valley, which was carved through the Galena-Platteville Dolomite exposing the underlying St. Peter Sandstone. The bedrock valley has been filled primarily with sands and gravels as deep as 250 feet. Well logs in the area of the Evergreen Manor subdivision confirm the presence of the sands and gravels down to 250 feet. Sandstone is encountered from 250 feet to 294 feet, underlain by interbedded layers of sandstone, limestone and shale. The aquifer of concern includes the shallow sand and gravel aquifer, along with the bedrock aquifers below supplying water to residents in the area. Previous groundwater investigations at the Warner Brake and Clutch facility, which is approximately 3200 feet east/northeast of the northern most contaminated residential well, indicated groundwater flow in a south/southwest direction.

2.1.4 Surrounding Land Use and Populations

The area surrounding the residential subdivisions consists of agricultural, industrial, and additional residential properties. In the immediate vicinity of the Site, Hononegah County Forest Preserve is to the west, Rock River borders the area on the south, and agricultural fields lie to the east and north (see Figure 1). A few scattered industries and a small industrial park are located approximately 1.5 miles north/northeast of the subdivisions of concern.

2.1.5 Sensitive Ecosystems

The contaminant plume has been found to extend to residential wells located along the Rock River, indicating that contaminants could enter the surface water via groundwater discharge to the river. Therefore, the probable point of entry into the river is located in the area at the

southern end of Evergreen Manor. The surface water pathway continues along the Rock River for the full 15 miles, ending at Sinnissippi Park in the city of Rockford.

According to the National Wetlands Inventory Maps prepared by the U.S. Department of the Interior, wetlands exist approximately 1/4-mile downstream from the probable point of entry and additional wetlands are located along the full 15-mile surface water route. According to information obtained from the Illinois Department of Conservation Impact Analysis Section, the Rock River in Winnebago County is classified as a highly valued aquatic resource.

2.1.6 Meteorology

The climate in the vicinity of the Site has a wide range of annual and daily temperatures. The mean average annual temperature is 47.7 degrees Fahrenheit (° F). Summer is generally warm and humid with a mean average temperature of 71.0° F and high temperatures that can exceed 90° F. The winter is cold and cloudy with mean average temperatures of 21.7° F with low temperatures below 0° F. The average annual precipitation is 36.28 inches.

2.2 Previous Removal Actions

There have been no known previous removal actions at this Site.

2.3 Source, Nature and Extent of Contamination

Although various groundwater investigations have been carried out, currently no source(s) of groundwater contamination has been identified. Future investigations could reveal information that will further characterize the groundwater plume and/or lead to the identification of the actual cause of contaminated groundwater in the area.

The groundwater plume has been identified through sampling conducted by both the IEPA, IDPH and U.S. EPA. Analytical results indicate that TCE and PCE are present within the plume above MCLs. The plume has been found to extend from the Rock River in a northeastern direction toward Rockton Road (see Figure 2). This is a length of approximately two miles. Contamination has been found in the sand and gravel aquifer at depths of approximately 60 feet to 80 feet.

2.4 Analytical Data

Water samples have been collected by IEPA, IDPH and U.S. EPA. Summaries of the available data are presented in Appendix A.

Residential well samples revealed TCE, PCE and volatile organic compound (VOC) contamination. TCE contamination in some of the residential wells has been detected at 75 ug/l.

PCE contamination has been detected at 5.3 ug/l. The most recent residential well results collected by U.S. EPA in May 1998, detected TCE at 18 ug/l and PCE at 5.3 ug/l.

2.5 Streamlined Risk Evaluation

The following is a summary of potential health risks at the Evergreen Manor site evaluated by U.S. EPA. This preliminary risk assessment is based on information from groundwater data of residential wells at the site. The assessment has identified the ingestion of TCE, PCE, and 1,1-dichloroethene through drinking water from affected private wells as the primary exposure pathway of concern (see Appendix B). Toxicity information on the chemicals of concern, TCE and PCE, was retrieved from ATSDR's Toxicological Profiles and the Integrated Risk Information System database.

2.5.1 Toxicological Profile

The main contaminants of concern detected in the groundwater drinking supply are TCE, PCE, and 1,1-dichloroethene. TCE, PCE, and 1,1-dichloroethene may enter the body through drinking contaminated water, dermal contact, or through inhalation.

TCE

Breathing large amounts of TCE may cause impaired heart function, coma, and death. Breathing it for long periods may cause nerve, lung, kidney, and liver damage. Breathing small amounts for short periods of time may cause headaches, lung irritation, dizziness, poor coordination, and difficulty concentrating. Drinking large amounts of TCE may cause nausea, liver and kidney damage, convulsions, impaired heart function, coma, or death. Drinking small amounts of TCE for long periods may cause liver and kidney damage, nervous system effects, impaired immune system function, and impaired fetal development in pregnant women, although the extent of some of these effects is not yet clear. Skin contact with TCE for short periods may cause skin rashes. Some studies with mice and rats have suggested that high levels of TCE may cause liver or lung cancer. Some studies of people exposed over long periods to high levels of TCE in drinking water or in workplace air have found evidence of increased cancer. However, these results are inconclusive because the cancer could have been caused by other chemicals. The International Agency for Research on Cancer (IARC) has determined that TCE is not classifiable as to human carcinogenicity.

PCE

PCE may enter the body through drinking contaminated water or through inhalation. Because PCE does not pass through the skin to any significant extent, entry into the body by this path is of minimal concern, although skin irritation may result from repeated or prolonged contact with the undiluted liquid. With high concentrations of PCE in air, particularly in closed, poorly ventilated areas, a single exposure to PCE can cause central nervous system effects leading to

dizziness, headache, sleepiness, confusion, nausea, difficulty in speaking and walking, and possibly unconsciousness and death. As might be expected, the symptoms occur almost entirely in work (or hobby) environments. The potential long-term health effects that might occur in humans from breathing lower levels of PCE than those levels that produce central nervous system effects, or from ingesting very low levels of the chemical found in some water supplies, have not been identified. According to ATSDR, animal studies conducted with amounts much higher than typical environmental levels, have shown that PCE can cause liver and kidney damage, liver and kidney cancers, and leukemia (cancer of the tissues that form white blood cells). Based on evidence from animal studies, PCE is thought to be capable of causing cancer in humans. It should be emphasized, however, that currently available information is not sufficient to determine whether PCE causes cancer in humans. The science advisory board has placed PCE on a continuum between B2 and C; this decision is still under review by U.S. EPA.

1,1-Dichloroethene

The main effect from breathing high levels of 1,1-dichloroethene is on the central nervous system. Some people lost their breath and fainted after breathing high levels of the chemical. Breathing lower levels of 1,1-dichloroethene in air for a long time may damage your nervous system, liver, and lungs. Workers exposed to 1,1-dichloroethene have reported a loss in liver function, but other chemicals were present. Animals that breathed high levels of 1,1-dichloroethene had damaged livers, kidneys and lungs. The offspring of some of the animals had a higher number of birth defects. We do not know if birth defects occur when people are exposed to 1,1-dichloroethene. Animals that ingested high levels of 1,1-dichloroethene had damaged livers, kidneys, and lungs. There were no birth defects in animals that ingested the chemical. Spilling 1,1-dichloroethene on your skin or in your eyes can cause irritation. U.S. EPA has determined that 1,1-dichloroethene is a possible human carcinogen. Studies on workers who breathed 1,1-dichloroethene have not shown an increase in cancer. These studies, however, are not conclusive because of the small numbers of workers and the short time studied. Animal studies have shown mixed results. Several studies reported an increase in tumors in rats and mice, and other studies reported no such effects.

2.5.2 Estimation of Hazard/Risk

In 1974, Congress passed the Safe Drinking Water Act. This law requires U.S. EPA to determine safe levels of chemicals in drinking water which do or may cause health problems. These non-enforceable levels, based solely on possible health risks and exposure, are called Maximum Contaminant Level Goals.

The MCLG for TCE and PCE has been set at zero because U.S. EPA believes that only this level of protection will eliminate the potential health problems described above.

Based on this MCLG, U.S. EPA has set an enforceable standard called a MCL. MCLs are set as close to the MCLGs as possible, considering the ability of public water systems to detect and remove contaminants using suitable treatment technologies.

The MCL has been set at 5 ppb because U.S. EPA believes, given present technology and resources, this is the lowest level to which water systems can reasonably be required to remove this contaminant should it occur in drinking water.

These drinking water standards and the regulations for ensuring that these standards are met, are called National Primary Drinking Water Regulations. All public water supplies must abide by these regulations.

Groundwater at the Evergreen Manor Groundwater Contamination Site contains concentrations of TCE and PCE above MCLs (see Table 1).

3. Identification of Removal Action Objectives

Groundwater is the only source of drinking water used within the four residential subdivisions of concern. Well logs indicate the majority of these private wells obtain water from the sand and gravel aquifer approximately 50 feet to 80 feet below ground surface. According to the IEPA Division of Public Water Supplies, within four miles of the area of the site there are 12 known public wells using water from the aquifer of concern, with those wells servicing approximately 16,520 people. It is estimated that approximately 6000 people within four miles of the site obtain drinking water from private wells (see Table 2 for a list of wells within four miles). The IEPA has identified more than 100 residential wells that are affected by the plume. The contaminated plume does not lie either partially or wholly within a designated wellhead protection area. However, 14 wellhead protection areas do exist within a 4-mile distance limit.

TABLE 1

MAXIMUM CONTAMINANT LEVELS AND MAXIMUM CONCENTRATIONS AT THE EVERGREEN MANOR SITE (units = ug/L)			
Constituent	**MCL[a]**	**Maximum Concentrations (Historical)**	**(1998)**
TCE	**5**	**75.4**	**18**
PCE	**5**	**5.3**	**5.3**
1,1-Dichloroethene	7	**7.2**	1.6
1,1,1-Trichloroethane	200	51.5	4.6
Cis 1,2-Dichloroethene	70	17	17
[b]	[b]	[b]	[b]

[a] MCLs regulated by the Drinking Water Regulations and Health Advisories, Office of Water, U.S. EPA.

[b] Future constituents, MCLs, and concentrations to be identified.

TABLE 2
GROUNDWATER POPULATIONS

Distance Miles	Private Wells	Public Wells	Total Population
0 - 1/4	282	0	736
1/4 - ½	158	0	412
½ - 1	126	2	6996
1 - 2	194	1	1933
2-3	689	2	3292
3 - 4	847	7	9142

Winnebago County average population: 2.61 people/household

Due to this contamination, the Evergreen Manor site poses a direct threat to human health and the environment, and warrants a removal action as set forth in Section 300.415(b)(2) of the National Contingency Plan (NCP). The applicable NCP factors include:

- **Prevention or abatement of actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances, pollutants or contaminants.** Groundwater in the Evergreen Manor area is known to be contaminated with TCE, PCE and other VOCs. Drinking water regulations and health advisories promulgated by U.S. EPA Office of Water, has set the TCE and PCE MCL standard at 5 ug/l. TCE and PCE were detected in several residential groundwater wells above the MCL.

  The primary and secondary routes of exposure to TCE and PCE in humans are inhalation and ingestion, respectively. The health effects from breathing vapors or drinking contaminated water with low levels of TCE and PCE have not yet been identified by ATSDR.

- **Prevention or abatement of actual or potential contamination of drinking water supplies or sensitive ecosystems.** Analytical results of residential wells in the Evergreen Manor Site area indicate TCE, PCE, acetone, 1,1,1-trichloroethane, 1,1-dichloroethene, 1,1-dichloroethane, and 1,2-dichloroethene. TCE and PCE were the only contaminants observed above MCL standards.

  To minimize potential and actual exposure to TCE and PCE, the removal objective identified is to provide a noncontaminated water supply to affected residences.

3.1 Determination of Removal Scope

IEPA's Expanded Site Inspection report for the Evergreen Manor Groundwater Contamination Site estimated the contamination plume extends from the Rock River in a northeastern direction toward Rockton Road (Figure 2). This is a length of approximately two miles. Within this area, it has been estimated that 203 residences utilize the groundwater from private wells.

Criteria evaluated for the removal action are:

- The selected alternative should be able to provide clean water;

- The water source should meet all identified applicable or relevant and appropriate requirements (ARARs), standards, criteria, or guidance of U.S. EPA or a state agency.

The goals of the removal action, as identified in 40 Code of Federal Regulations (CFR) Section 300.415, subsections (b)(1), (c), and (I) are:

- To abate, prevent, minimize, stabilize, mitigate, or eliminate the release or the threat of release;

- Removal action shall, to the extent practical, contribute to the efficient performance of any anticipated long-term remedial action with respect to the release concerned; and

- Fund-financed removal actions under CERCLA Section 104 and removal actions pursuant to CERCLA Section 106 shall, to the extent practical, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements under federal environmental, or state environmental, or facility siting laws.

All contaminated residential wells will be identified by those meeting or exceeding MCLs (see Table 1). Existing and future contaminated drinking water will be defined by the "Drinking Water Regulations and Health Advisories' Maximum Contaminant Levels", established by U.S. EPA Office of Water.

3.2 Determination of Removal Schedule

The general schedule for the removal actions contemplated are as follows:

<u>Alternative Water Supply</u>

■ Mobilization and sampling (as needed)	2 weeks
■ Results and evaluation (as needed)	4 weeks
■ Engineering design	12 weeks
■ Connection to alternate water supply	26 weeks

<u>Treatment Alternatives</u>

■ Mobilization and sampling (as needed)	2 weeks
■ Results and evaluation (as needed)	4 weeks
■ Installation of filters	1-2 weeks

3.3 Identification and Compliance With ARARS

Several ARARs are applicable to these removal actions. A listing and brief discussion of the three major groups of ARARs that will be attained by the selected remedy is provided here.

Chemical-Specific ARARs: Chemical-specific ARARs regulate the release of specific substances to the environment that have certain chemical and toxicological characteristics.

- Safe Drinking Water Act (SDWA) National Primary Drinking Water Standards (40 CFR 141), MCLs are applicable and proposed MCLs are to be considered.

- Safe Drinking Water Act (SDWA) National Primary Drinking Water Standards (40 CFR 141) non-zero MCLGs are applicable and non-zero proposed MCLGs are to be considered.

- Illinois Groundwater Quality Standards (35 IAC 620.140) are applicable groundwater standards.

Location-Specific ARARs: Location-specific ARARs are those requirements that relate to the geographic location of the site.

- Federal Endangered Species Act of 1973, as amended. This Act requires that actions must be performed to conserve endangered or threatened species located in and around the site. Activities carried out under any action must not destroy or adversely modify the critical habitat upon which endangered species depend.

Action-Specific ARARs: Action-specific ARARs are requirements that define acceptable treatment and disposal requirements for hazardous substances. Substantive requirements of the following may be ARARs.

- Resource Conservation and Recovery Act (RCRA) at 40 CFR 261 is applicable for identification of hazardous wastes (e.g. spent carbon) for identifying proper disposal of wastes and may be relevant and appropriate for sampling activities; delegated program in Illinois is implemented at 35 IAC 721.

- Resource Conservation and Recovery Act (RCRA) at 40 CFR 262 is applicable for generators of hazardous waste (e.g., if procedures outlined in 40 CFR 261 characterize spent carbon noted above as a hazardous waste) if such materials are disposed of offsite; delegated program in Illinois is implemented at 35 IAC 722.

- Resource Conservation and Recovery Act (RCRA) at 40 CFR 263 is applicable for transporters of hazardous wastes (e.g., if procedures noted in 40 CFR 261 characterize spent carbon as a hazardous waste; the delegated program in Illinois is implemented at 35 IAC 723.

- Illinois Solid Waste and Special Waste Handling Regulations at 35 IAC 808 and 35 IAC 809 are applicable for off-site special waste hauling (if spent carbon wastes are characterized as special wastes).

3.4 Planned Removal Activities

Removal activities planned for the Evergreen Manor Site include providing clean water to affected residences.

4. Identification and Analysis of Removal Action Alternatives

Three removal alternatives are discussed to address the removal action objectives stated in Section 3.0. The three removal action alternatives are:

1) Water Supply Alternative - North Park Public Water District
2) Treatment Alternative - Point-of-Entry Drinking Water Filters
3) Treatment Alternative - Point-of-Use Drinking Water Filters

4.1 Identification and Analysis of Water Supply Alternatives

The water supply alternative evaluates the supply of potable water from uncontaminated wells or other sources. The source evaluated is the North Park Public Water District.

4.2 Identification and Analysis of Treatment Alternatives

VOCs, particularly TCE and PCE, are the primary contaminants identified in the Site groundwater. Treatment alternatives include use of carbon adsorption filters to effectively mitigate these contaminants. Carbon filters applied at the outlet of the well (point-of-entry) or at the kitchen faucet (point-of-use) can provide water free of VOC contamination.

Typically, for a point-of-entry remedial system, contaminated water is passed through a sediment filter where large diameter particulates are physically removed from the water. The water then circulates through a carbon filter, where the contaminants undergo adsorption onto the carbon filter. The water then exits the process and is potable.

Carbon and sediment filters will have to be replaced at the end of a calculated life cycle. Also, it is difficult to monitor the effluent of carbon filters on a day-to-day basis.

5. Detailed Analysis of Alternatives

The water supply alternative and treatment alternative options are evaluated in the following sections for effectiveness, implementability, and cost.

5.1 Effectiveness

5.1.1 Overall Protection of Public Health and Environment

Water Supply Alternatives

North Park Public Water District - North Park Public Water District has the ability to eliminate all existing threats posed to public health by providing a reliable and safe alternative source of water to the Evergreen Manor community.

Treatment Alternatives

Carbon Filters - Both point-of-entry and point-of-use carbon filters would effectively mitigate the threat to public health from ingestion of contaminated drinking water. Point-of-entry devices would also eliminate existing threats to human health posed by inhalation of VOCs. The mitigation potential of these devices is dependent on two considerations. First, the concentrations of the contaminants of concern cannot exceed the removal capabilities of the remedial units. Second, the life expectancy of the units must not be exceeded.

Carbon filters are effective in reducing VOCs only. Residential well sample results from the Evergreen Manor Site did not indicate any inorganic contamination, but if inorganic contaminants are encountered in the future, these units will be rendered ineffective without the use of additional treatment devices.

5.1.2 Compliance with Applicable or Relevant and Appropriate Requirements (ARARs), Other Criteria, Advisories, and Guidance

Water Supply Alternatives

North Park Public Water District - All applicable ARARs identified in Section 3.3 would be met for this alternative.

Treatment Alternatives

The point-of-entry carbon filters would provide effective removal of contaminants and abate the inhalation and dermal hazard if installed at the well source. All applicable ARARs identified in Section 3.3 would be met for this alternative.

The point-of-use carbon filters would provide effective removal of contaminants at the kitchen faucet. All applicable ARARs identified in Section 3.3 would be met for this alternative.

5.1.3 Long-Term Effectiveness and Permanence

The North Park Public Water District water supply has been identified as a long-term effective source and promises to be a permanent solution.

The long-term effectiveness of carbon filter treatment depends upon the willingness and ability to maintain these units over a long period of time. Carbon filters are generally considered a temporary solution.

Magnitude of Risk

Alternate water supply options eliminate the magnitude of risk associated with the human exposure to contaminated water found at the site.

Carbon treatment alternatives effectively reduce the magnitude of risk associated with the human exposure to contaminants found in the water by treating the water.

Adequacy

Alternate water supply options and carbon treatment options adequately protect the population from exposure to contaminants by providing clean water.

Reliability of Control

Alternate water supply options are reliable controls. Reliability of individual residential carbon units is difficult to monitor due to the need for frequent sampling of influent and effluent water concentrations. The reliability of filter systems is increased through the use of : 1) dual cartridge with premium grade carbon, 2) a flow inhibitor, and 3) an automatic shut-off feature.

5.1.4 Reduction of Toxicity, Mobility, or Volume Through Treatment

As mentioned earlier, the objective of the removal action is to provide noncontaminated water to effected residences. It is not the objective of this removal action to minimize plume migration and evaluate and implement treatment alternatives for ground water contamination.

Carbon filters are effective in reducing the level of TCE and PCE and other VOCs. Carbon filter treatment systems would not be effective in reducing the mobility of the contaminant plume since multiple wells would be drawing water in different directions. The alternative water supply option does not provide a reduction of toxicity, mobility, or volume since treatment is not employed with these options.

5.1.5 Short-Term Effectiveness

The water supply alternative and treatment alternatives are evaluated for their short-term effectiveness with respect to protection of the community and workers, their environmental impacts and the time required to achieve response objectives.

Water Supply Alternative

The provision of an alternative water supply involves the layout of pipelines from the source to the customer and the connection of the customer to the source. The excavated areas would be backfilled with clean fill and restored to, at a minimum, pre-existing conditions. Normal construction-related risks are involved in the implementation of a water supply alternative.

The installation of a water supply option could take up to 9 months once funding for the action is obtained. Funding for the water supply option could be difficult to obtain in an expedited manner due to the cost. Therefore, due to the length of time necessary to implement this option and the potential difficulty in obtaining funding, the short-term effectiveness of this option is questionable.

Treatment Alternative

The treatment alternatives will provide short-term effectiveness. The installation of the treatment units and all necessary plumbing connections for each residence could take several hours for the point-of-use carbon filters and up to a week for point-of-entry carbon filters.

5.2 IMPLEMENTABILITY

In the following section, the alternative water supply option and the treatment options are evaluated against parameters such as technical feasibility, administrative feasibility, availability of services and materials, and state and community acceptance.

Potential risks during the implementation phase of carbon filter systems are plumbing-related and pose minimal risk.

5.2.1 Technical Feasibility

The technical feasibility of a water supply alternative and treatment alternatives is evaluated in terms of degree of difficulty anticipated in implementing these options.

Water Supply Alternative

The alternative water supply option involves the installation of new pipelines, connections to dwellings, and compliance with ARARs. Difficulties may be encountered in the following

areas: evaluation of pipeline pathways, access to pipeline pathways, utilities, and other physical obstructions. Various agencies will be required to cooperate in implementing this alternative. The degree of technical difficulty involved in pipeline connections to customers is minimal.

Treatment Alternative

Carbon filter technology has been extensively used in treating VOC contamination and is readily available. Both types of carbon filter units can be installed without any difficulty and require minimal service by residents. The life of the filters will have to be estimated on an individual basis by considering daily water consumption of each residence. The degree of difficulty in replacing filters is minimal and the exhausted filters can be disposed of as municipal waste (point-of-use). Sampling of treated water should be conducted soon after the installation of carbon units and continue at a regular interval thereafter. In order to accomplish sampling activities and maintenance, easy access to the residences is needed. Obtaining easy access to residences may prove to be a major drawback of this alternative. Current point-of-use carbon filter units can be adjusted to shut off the water supply when a particular volume of water has passed through the filter. This would minimize the number of samples necessary to ensure clean water.

5.2.2 Administrative Feasibility

Water Supply Alternative

Five factors need to be addressed before a new pipeline can be installed in the Evergreen Manor site area. They are as follows:

1) U.S. EPA will delineate the plume; the plume will dictate the pipeline pathway;
2) The selected engineering firm will have to have all obstructions, existing pipelines, and utilities mapped and verified, before construction begins;
3) All permits or permit equivalents, waivers, and other pertinent documents needed from state, federal and local governments must be obtained before construction;
4) Proper permission from all residences needs to be obtained; and
5) Well abandonment

Treatment Alternative

Four factors need to be addressed before the installation of carbon filters or air strippers. They are as follows:

1) U.S. EPA contractor and residences need to coordinate the schedule for installation of treatment units;
2) Proper operation and maintenance procedures of treatment units would need to be developed;

3) All waivers and other pertinent documents needed from federal, state, and local governments must be obtained before installation; and
4) The contractor needs to develop a schedule for installation of filters, agreeable to all residences, before installation.

5.2.3 Availability of Services and Materials

Water Supply Alternative

This alternative requires services and materials to implement the option. The alternate water supply alternative does not require treatment and would be easier to implement because they require less material.

All equipment, personnel, services, materials, and other resources needed to complete the installation and connection of all residences to the alternative water supply source are expected to be procured prior to and in time to maintain all schedules involved with said process.

Treatment Alternative

Dwelling treatment units will be installed by an appropriate contractor, who will be responsible for all connections necessary to ensure flow of clean water to residences. The contractor will be responsible for compliance with all pertinent federal, state and local regulations and requirements, and sections and requirements of this report.

5.2.4 State and Community Acceptance

Community Acceptance

Community acceptance of the removal action alternatives will be evaluated during the public comment period.

State Acceptance

State acceptance of the options will be evaluated during the public comment period. The State has agreed to finance operation and maintenance costs for the point-of-use drinking water filter removal action alternative after the first year.

5.3 Cost

Three different alternatives are applicable to the Evergreen Manor Site. The first is an alternative water supply that will provide potable water to affected areas through an existing public water supply system in the Site vicinity. The second and third alternatives involve treatment of contaminated water at residential wells before utilizing the water as potable water.

The following assumptions are applicable to the costs of each alternative:

- Number of residences in the affected area is 108; and
- Water consumption is 225 gpd per residence.

Any option other than residential well treatment should also include proper abandonment of all wells in the affected area to ensure nonutilization of these wells and minimize the mobility of the contaminants.

Water Supply Alternative

The North Park Public Water District has an operable pipeline near the Evergreen Manor Site. The North Park Public Water District has enough capacity to satisfy the needs of the Evergreen Manor Site area. The supply of water from the North Park Public Water District requires new pipelines into and in the site area and connection to the residences. There are no annexation issues related to residences being connected to the North Park Public Water District system. The North Park Public Water District uses metered water rates and the average metered water utility cost for a family of four is approximately $19.00 per month. The total projected capital cost is $1,775,600, well abandonment would add $126,800, and operation and maintenance costs are not applicable for this option.

Residential Treatment

Residential treatment involves passing untreated water through carbon filters installed either at point-of-entry or point-of-use. The carbon filter alternatives include treatment units and their installation.

Point-of-entry - This involves passing well water through sediment and carbon filters where the water enters the residence. Replacement of carbon and sediment filters may be needed annually and will cost about $1,650.00 per residence (Appendix D.1). The total projected capital cost is $248,000, and operation and maintenance of these units is projected to cost $165,964 for two years. The operation and maintenance costs would become the responsibility of IEPA after the first year.

Point-of-use - This involves placing filters on the kitchen faucet. Replacement of carbon and sediment filters may be needed every six months and will cost about $95.00 per residence (Appendix D.2). The total projected capital cost is $96,800, and operation and maintenance costs of these units is projected to cost $57,223 for two years. The operation and maintenance costs would become the responsibility of IEPA after the first year.

Abandonment of Residential Wells

Residential well abandonment costs include removal of well pipes and grouting wells. The average depth of the well is assumed to be 80 feet. The total projected cost for this action is $126,800. These costs were included with the alternative water supply option.

5.3.1 Direct Capital Costs

Well Abandonment

Direct costs associated with well abandonment include removing well pipes and grouting the wells at $5.00 per foot:

- Pulling wells and grouting @ $5/foot(80'/residence)= $ 81,200

Water Supply Alternative

Direct costs associated with the North Park alternative include materials and labor for 30,000 feet of pipeline from the source into residences, plumbing, accessories, and tap-in fees.

- Material and labor for pipeline @ $50/linear foot	= $1,500,000
- Tap-in fee, meters, curb stops, etc., @ $300/residence	= $ 32,400
- Landscaping @ $800/house	= $ 86,400
- Total	= $1,618,800

Residential Treatment

Direct costs associated with the residential treatment alternative for point-of-use carbon system includes the purchase of a filter system, sediment cartridges, carbon cartridges and accessories. Sampling of treated water should be done soon after the installation of carbon units.

- Point of entry filters @ $355/piece	=$ 38,340
- Sample Analysis - VOCs	
- 108 @ $200/sample	=$ 21,600
- Filter Change Out (108 @ $95/residence)	=$ 10,260
- Total	$ 70,200

Direct costs associated with the residential treatment alternative for point-of-entry carbon system includes the purchase of filter system, carbon filters and accessories. Sampling of treated water should be done soon after the installation of carbon units.

- Filter System @ $1,650/piece	=$ 178,200
- Sample Analysis - VOCs	
- 108 @ $200/sample	=$ 21,600
- Total	$199,800

5.3.2 Indirect Capital Costs

Well Abandonment

Indirect costs for this alternative are contractor services and miscellaneous costs associated with obtaining permits or permit equivalents, etc.

- Labor and accessories, etc., @ $200/residence	=$ 40,600
- Contractor services	=$ 5,000
- Total	=$ 45,600

Water Supply Alternative

Indirect costs for this alternative are engineering and design of the pipeline, and obtaining permits or permit equivalents.

- Design @ $30/hour for 1,000 hours	=$ 30,000

Residential Treatment

Indirect costs for the point-of-use alternative are contractor procurement services and associated connections.

- Labor and accessories, etc., @ $200/residence	=$ 21,600
- Contractor services	=$ 5,000
- Total	$ 26,600

Indirect costs for the point-of-entry alternative are contractor procurement services and associated connections.

- Labor and accessories, etc., @ $400/residence	=$ 43,200
- Contractor services	=$ 5,000
- Total	$ 48,200

5.3.3 Long-Term Operation and Maintenance Costs

The following information compares present-worth, calculated on a basis of a 2-year project and 10% interest, and annual costs.

Water Supply Alternative

No additional long-term operation and maintenance costs are anticipated for this alternative.

Residential Treatment

Long-term operation and maintenance costs for the point-of-entry filter system are associated with replacement filters and sampling of treated water.

	Annual Cost	Present Worth
Filter Change Out		
- 108 @ $770/residence	=$ 83,160	$ 144,365
Sample Analysis - VOCs		
- 108 @ $200/sample	=	$ 21,600
Total		$ 165,965

Long-term operation and maintenance costs for the point-of-use filter system are associated with replacement filters and sampling of treated water.

	Annual Cost	Present Worth
Filter Change Out		
- 108 @ ($95/residence x 2 times/year)	=$ 20,520	$ 35,623
Sample Analysis - VOCs		
- 108 @ $200/sample	=	$ 21,600
Total		$ 57,223

6. Comparative Analysis of Removal Action Alternatives

A comparative analysis of different alternatives with respect to their effectiveness, implementability, and costs are listed in Table 3.

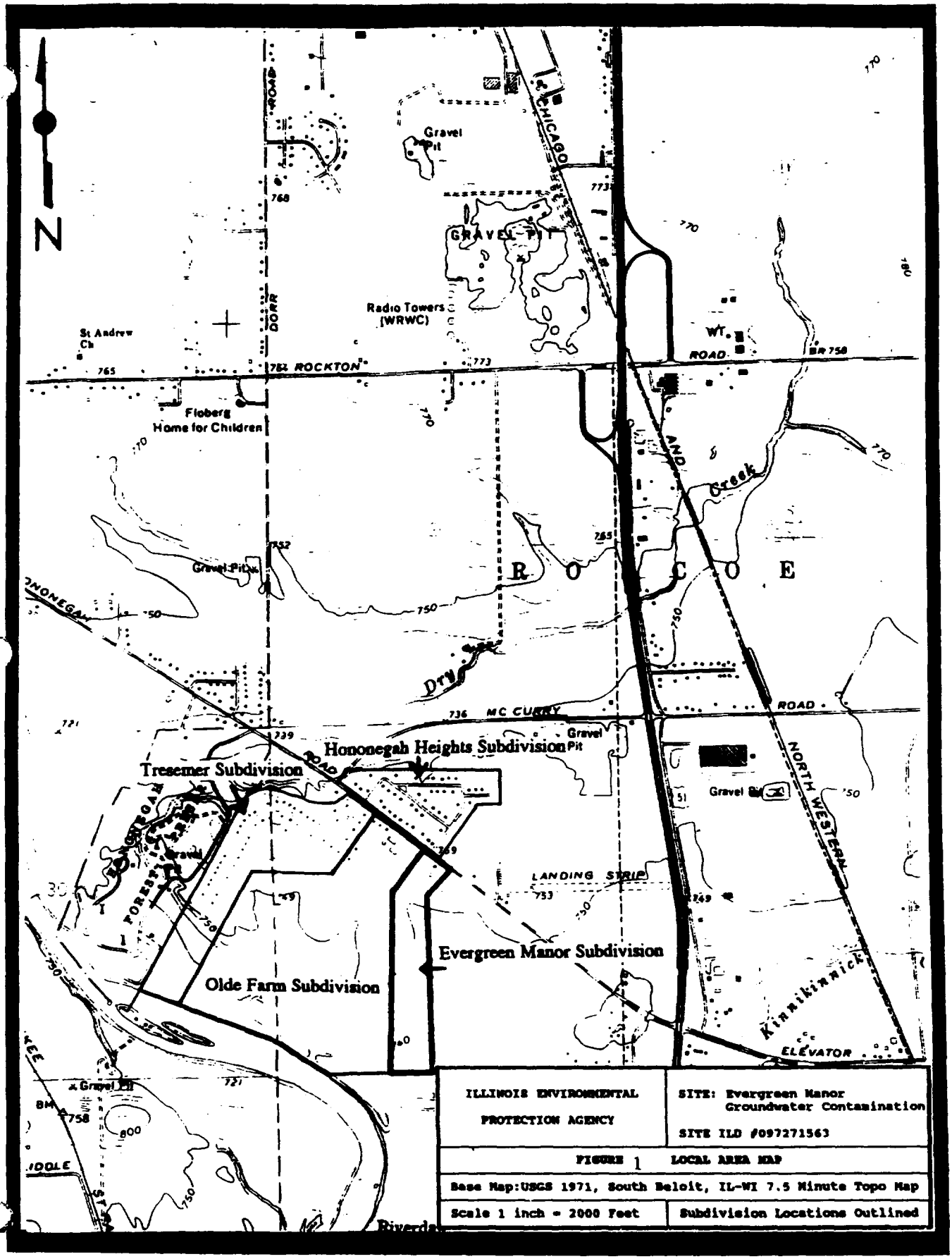
TABLE 3

COMPARATIVE ANALYSIS OF REMOVAL ACTION ALTERNATIVES EVERGREEN MANOR SITE

Criteria	North Park Public Water District	Residential Treatment Point-of-Entry	Residential Treatment Point-of-Use
Effectiveness, protection of health and environment	Adequate protection to human health and will reduce, control/eliminate risks. Will not abate groundwater contamination	Adequate protection to human health and will reduce risk. Will abate actual groundwater contamination at very slow pace.	Adequate protection to human health and will reduce risk. Will abate actual groundwater contamination at very slow pace.
ARAR and other compliance	Adequately abates actual and potential exposure. Can supply clean water source and meet all applicable ARARs.	Adequately abates actual and potential exposure. Can meet all applicable ARARs.	Adequately abates actual and potential exposure from ingestion of contaminated water. Can meet all applicable ARARs.
Long-term effectiveness and permanence	Will provide long-term effectiveness and permanence.	Long-term effectiveness and permanence is questionable.	Long-term effectiveness and permanence is questionable.
Reduction of toxicity, mobility, and volume	No reduction of toxicity, mobility, and volume.	Provides limited reduction of toxicity, mobility, and volume.	Provides limited reduction of toxicity, mobility, and volume.
Short-term effectiveness	Short-term effectiveness is questionable. May take up to 9 months to implement once funding is secured.	Will provide short-term effectiveness	Will provide short-term effectiveness
Implementability			
Technical feasibility	Low degree of difficulty in construction and operation.	Low degree of difficulty in construction and operation of treatment units.	Low degree of difficulty in construction and operation of treatment units.
Costs			
Direct Capital	$1,700,000	$199,800	$70,200
Indirect Capital	$75,600	$48,200	$26,600
Well Abandonment	$126,800	N/A	N/A
Long-term operation and maintenance	None	$165,964	$57,223

N/A - Not Applicable

FIGURES


N
Gravel Pit
CHICAGO
GRAVEL PIT
Radio Towers (WRWC)
St Andrew Ch
ROCKTON
Floberg Home for Children
Gravel Pit
ROCOE
Dry Creek
MC CURRY ROAD
Hononegah Heights Subdivision
Tresemer Subdivision
Gravel Pit
NORTH WESTERN
LANDING STRIP
Evergreen Manor Subdivision
Olde Farm Subdivision
Kinnikinnick
ELEVATOR
IDDLE
Riverdale
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
SITE: Evergreen Manor Groundwater Contamination
SITE ILD #097271563
FIGURE 1 LOCAL AREA MAP
Base Map:USGS 1971, South Beloit, IL-WI 7.5 Minute Topo Map
Scale 1 inch = 2000 Feet
Subdivision Locations Outlined

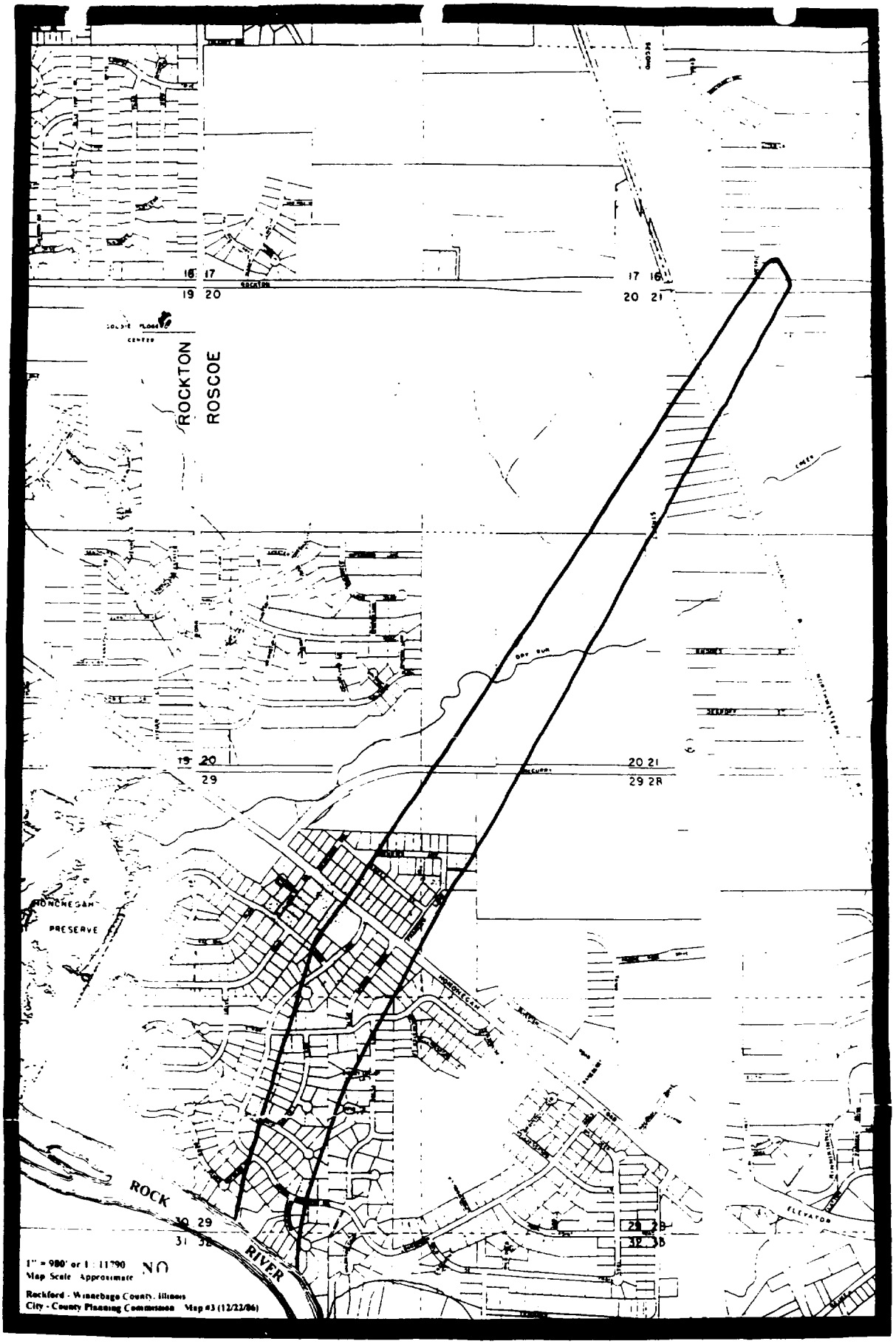


FIGURE 2 ESTIMATED EXTENT OF GROUNDWATER PLUME

As Defined By Sample Points Used In This Scoring Package

Illinois Environmental Protection Agency	Site Evergreen Manor Groundwater Contamination ILD 984836734

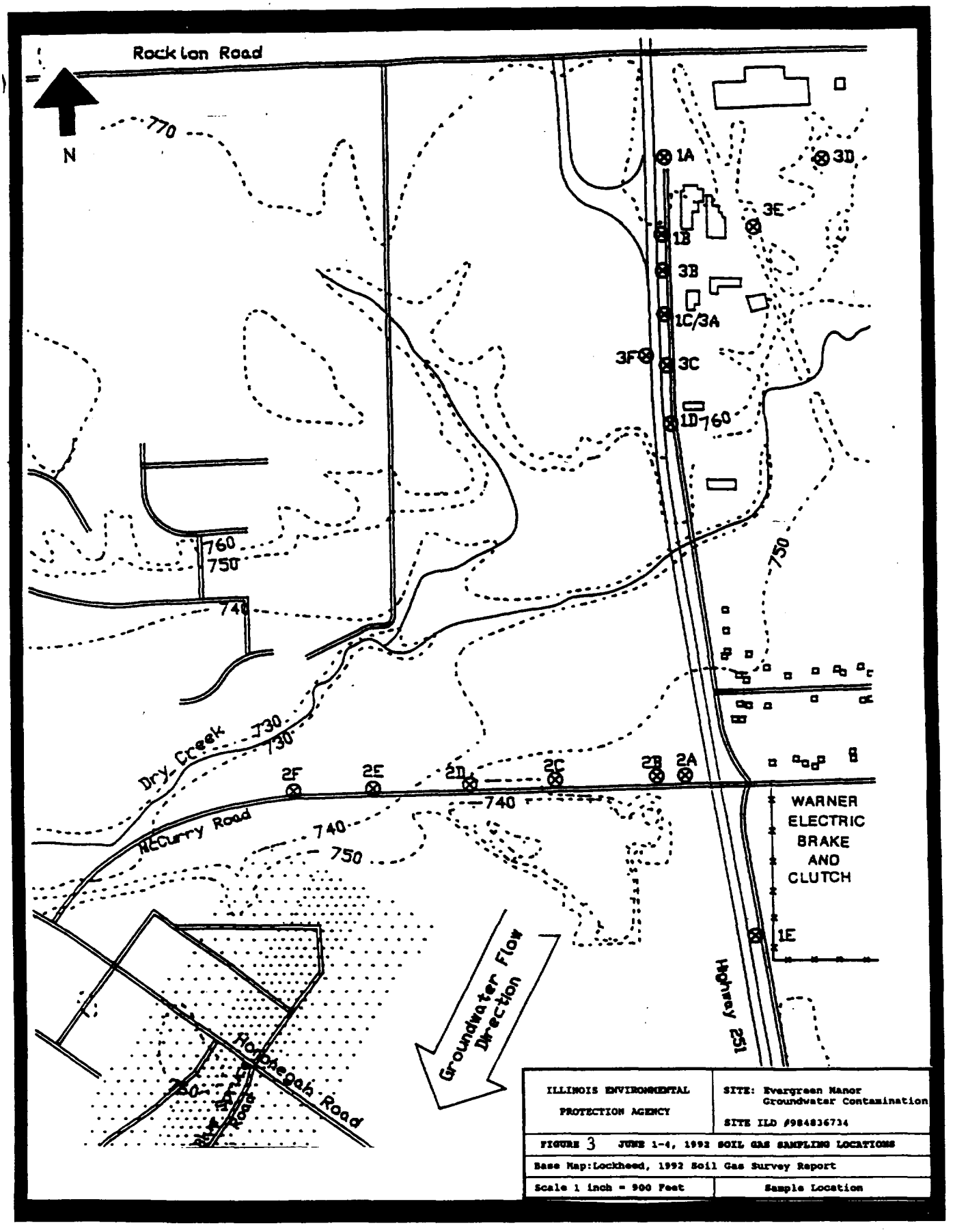


Figure 3

CERCLA SSI: Evergreen Manor GW Contamination - ILD 984836734

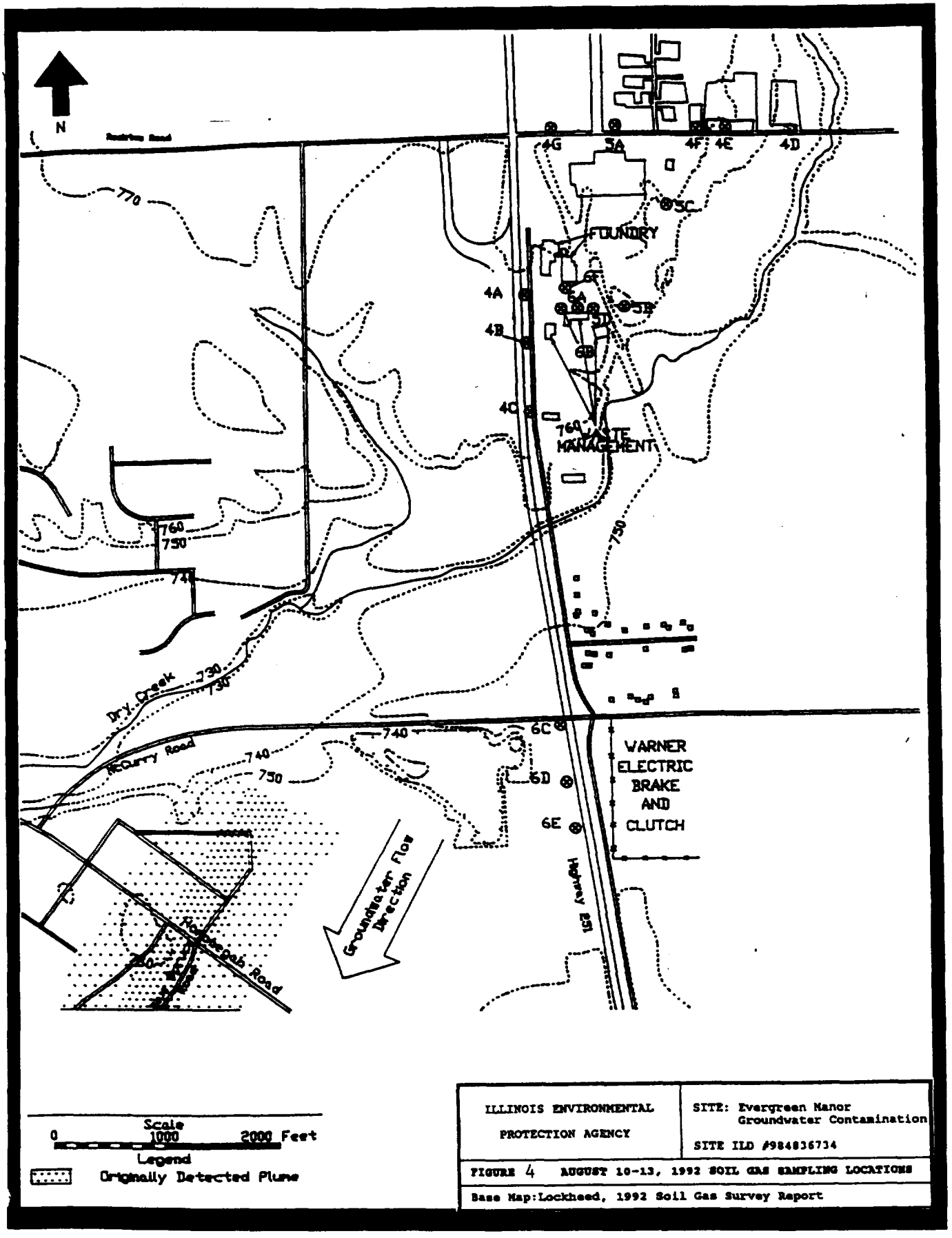


Figure 4

CERCLA SSI: Evergreen Manor GW Contamination - ILD 984836734

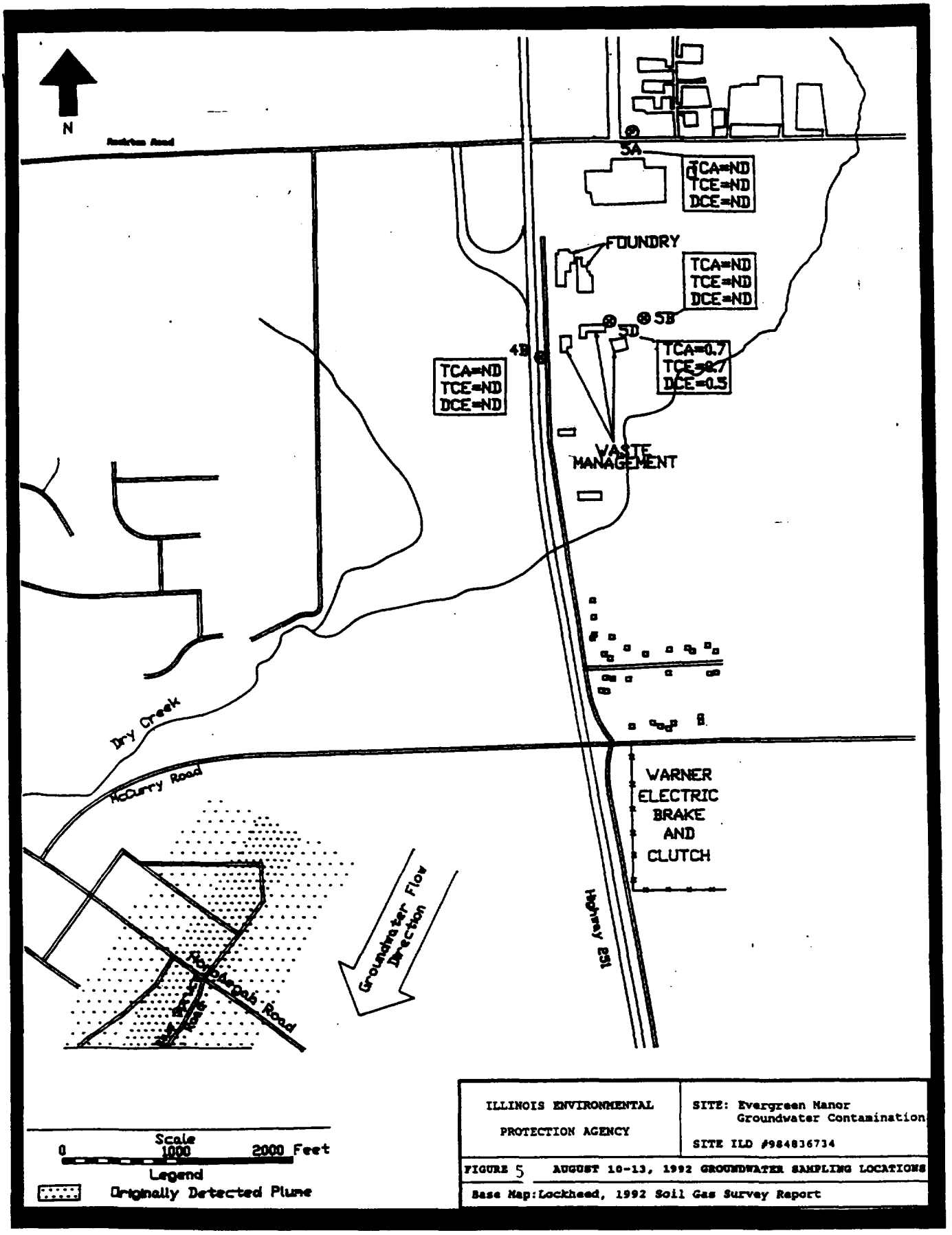


Figure 5
CERCLA SSI: Evergreen Manor GW Contamination - ILD 984836734

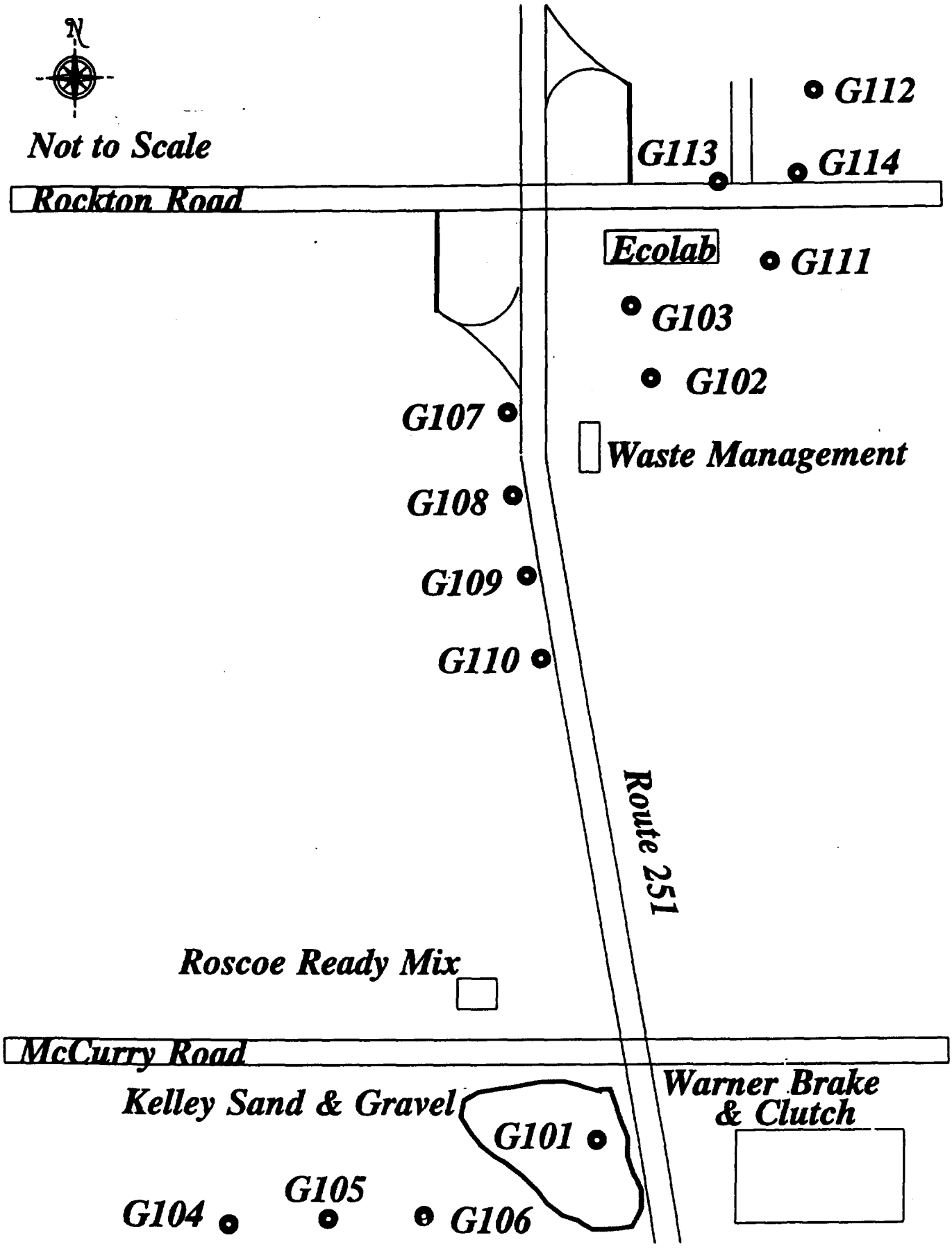

N
Not to Scale
G112
G113
G114
Rockton Road
Ecolab
G111
G103
G102
G107
Waste Management
G108
G109
G110
Route 251
Roscoe Ready Mix
McCurry Road
Warner Brake
& Clutch
Kelley Sand & Gravel
G101
G105
G104
G106

FIGURE 6

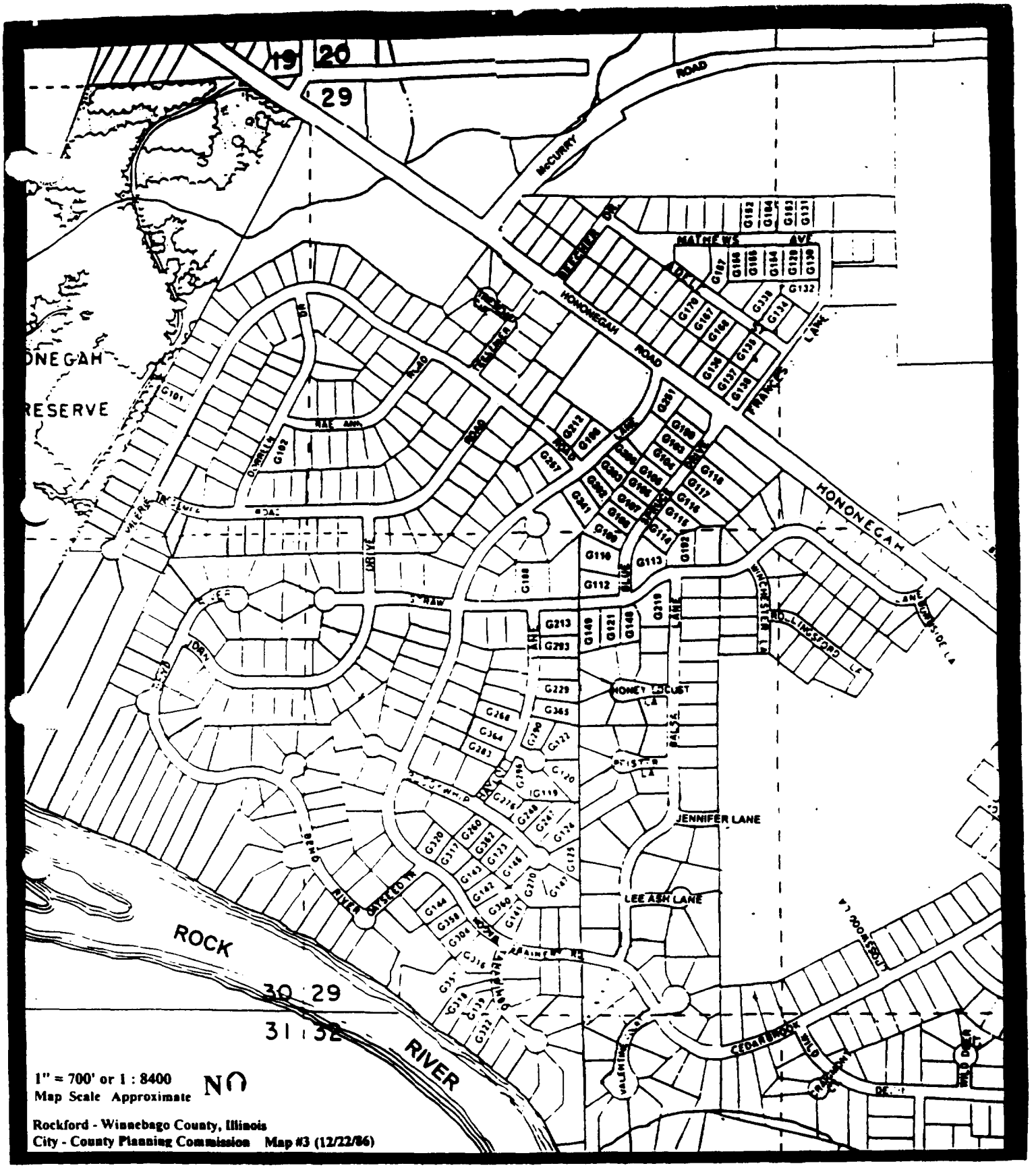


FIGURE 7	RESIDENTIAL SAMPLE LOCATIONS
Illinois Environmental Protection Agency	Site: Evergreen Manor Groundwater Contamination ILD 984836734

APPENDIX A

ANALYTICAL RESULTS

APPENDIX A.1

1992 IEPA CERCLA SCREENING SITE INSPECTION SOIL GAS AND GROUNDWATER ANALYTICAL DATA

Table 1. Soil gas sampling locations and detected concentrations.

SAMPLE NUMBER	DEPTH SAMPLED (ft)	CONCENTRATION (in µg/L) TCA	TCE	DCE
4A	36	ND[1] F[2]	ND F	ND F
4B	36	ND F	ND F	ND F
4C	36	ND F	ND F	ND F
4D	12	ND F	ND F	ND F
4E	15	ND F	ND F	ND F
4F	15	ND F	ND F	ND F
4G	15	ND F	ND F	ND F
5A	15	ND F	ND F	ND F
5B	51	ND F	ND F	ND F
5C	36	ND F	ND F	ND F
5D	36	ND F	ND F	ND F
6A	36	0.03F	ND F	ND F
6B	6	ND F	ND F	ND F
6B	12	0.10F	ND F	ND F
6B	18	0.13F	ND F	ND F
6B	24	0.20F	ND F	ND F
6B	30	0.15F	ND F	ND F
6B	36	0.17F	ND F	ND F
6C	21	0.05F	ND F	ND F
6D	21	ND F	0.20F	ND F
6E	21	ND F	ND F	ND F
6F	36	0.12F	ND F	0.30 F

Table 2. Groundwater sampling locations and detected concentrations.

Sample	(Concentration in µg/L) TCA	TCE	DCE
4B	ND[1] F[2]	ND F	ND F
5A	ND F	ND F	ND F
5B	ND F	ND F	ND F
5D	0.7 F	0.7 F	0.5 F

[1] ND = Non-detect concentration; minimum detection limit = 0.1 µg/L.

[2] F = Qualifier indicating data have been generated using FASP methodologies. Hence, the analytes are tentatively identified and concentrations are quantitative estimates.

APPENDIX A.2

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

ANALYTICAL DATA

Summaries Taken From IEPA
Hazardous Ranking System Documentation Record
May 29, 1997

Sample	Location	Surface Elevation feet above Mean Sea Level (MSL)	Elevation of Withdrawal ** feet above Mean Sea Level (MSL)	Date Sampled	Reference
G113	11975 Blue Spruce Dr.	750*	693-687	11/9/93	4; 15:14; 19:1,2; 21:9
G114	12017 Blue Spruce Dr.	750*	693-687	11/9/93	4; 15:15; 19:1,2; 21:10
G115	12031 Blue Spruce Dr.	750*	694-687	11/9/93	4; 15:16; 19:1,2; 21:11
G116	12053 Blue Spruce Dr.	750*	693-687	11/9/93	4; 15:17; 19:1,2; 21:12
G117	12075 Blue Spruce Dr.	750*	693-687	11/9/93	4; 15:18; 19:1,2; 21:13
G118	12091 Blue Spruce Dr.	750*	694-687	11/9/93	4; 15:19; 19:1,2; 21:14
G119	11775 Hayloft Ln.	750*	750-688	11/9/93	4; 15:20; 19:1,2; 21:15
G120	11793 Hayloft Ln.	750*	750-688	11/9/93	4; 15:21-22; 19:1,2; 21:16
G121	4325 Straw Ln.	750*	689	11/10/93	4; 15:25; 19:1,2; 21:17

Sample	Location	Surface Elevation (MSL)	Elevation of Withdrawal (MSL)**	Date Sampled	Reference
G141	11501 Wagon Ln.	730*	730-668	11/16/93	4; 15:49; 19:1,2; 21:23
G142	11549 Wagon Ln.	735*	unknown	11/16/93	4; 15:50
G143	11511 Wagon Ln.	730*	730-668	11/16/93	4; 15:51; 19:1,2; 21:24
G144	11568 Wagon Ln.	730*	730-668	11/16/93	4; 15:52; 19:1,2; 21:25
G146	4257 Buggywhip Ln.	735*	735-673	11/16/93	4; 15:53; 19:1,2; 21:26
G147	4295 Buggywhip Ln.	735*	735-673	11/16/93	4; 15:54; 19:1,2; 21:27
G148	4341 Straw Ln.	750*	693-687	11/16/93	4; 15:55; 19:1,2; 21:28
G149	4303 Straw Ln.	750*	695-687	11/16/93	4; 15:56; 19:1,2; 21:29
G152	4474 Mathew Ave.	750*	unknown	12/16/93	4; 16:6
G153	4536 Mathew Ave.	750*	unknown	12/16/93	4; 16:7
G154	4509 Mathew Ave.	750*	unknown	12/16/93	4; 16:7
G155	4489 Mathew Ave.	750*	unknown	12/16/93	4; 16:8
G156	4463 Mathew Ave.	750*	unknown	12/16/93	4; 16:8

Sample	Location	Surface Elevation (MSL)	Elevation of Withdrawal (MSL)**	Date Sampled	Reference
G219	4367 Straw Ln.	750*	700-687	01/04/94	4; 16:38; 19:1,3; 21:37
G229	11865 Hayloft Ln.	750*	750-688	01/10/94	4; 16:42; 19:1,3; 21:38
G241	12091 Wagon Ln.	750*	unknown	01/10/94	4; 16:48;
G247	4254 Buggywhip Ln.	740*	unknown	01/11/94	4; 16:51
G248	4232 Buggywhip Ln.	740*	740-678	01/11/94	4; 16:51; 19:1,3; 21:39
G251	12199 Wagon Ln.	755*	unknown	01/11/94	4; 16:53
G257	12088 Wagon Ln.	750*	750-688	01/11/94	4; 16:56; 19:1,3; 21:40
G260	4201 Buggywhip Ln.	740*	740-678	01/11/94	4; 16:57; 19:1,3; 21:41
G268	11828 Hayloft Ln.	750*	750-687	01/31/94	4; 16:61; 19:1,3; 21:42
G270	4279 Buggywhip Ln.	735*	unknown	01/31/94	4; 16:62
G276	11733 Hayloft Ln.	745*	unknown	01/31/94	4; 16:65
G283	11772 Hayloft Ln.	740*	unknown	02/01/94	4; 16:68

Sample	Location	Surface Elevation (MSL)	Elevation of Withdrawal (MSL)**	Date Sampled	Reference
G360	11525 Wagon Ln.	735*	735-673	03/25/94	4; 16:116; 19:1,3; 21:51
G362	4217 Buggywhip Ln.	740*	740-678	03/25/94	4; 16:117; 19:1,3; 21:52
G364	11804 Hayloft Ln.	745*	unknown	03/25/94	4; 16:117
G365	11847 Hayloft Ln.	750*	750-688	03/25/94	4; 16:118; 19:1,3; 21:53
G101D	Kelley Sand & Gravel	727.6	657.6-647.6	02/23/95	16:148; 23:37,70
G103S	EcoLab	764.3	732.3-722.3	02/21/95	16:142; 23:40,70
G104S	North of Mathew Ave.	753.3	703.3-693.3	02/22/95	16:147; 23:42,70
G105D	North of Mathew Ave.	755.3	665.3-655.3	03-23-94	16:146; 23:45,70
G105D	North of Mathew Ave.	755.3	665.3-655.3	02/22/95	16:145; 23:45,70
G106S	Northeast of Mathew Ave.	754.8	699.8-689.8	02/22/95	16:145; 23:46,70
G107D	West of Hwy. 251	763.3	708.3-698.3	03/25/94	16:109; 23:49,70
G107D	West of Hwy. 251	763.3	708.3-698.3	02/21/95	16:143; 23:49,70
G108D	West of Hwy. 251	764.4	709.4-699.4	02/21/95	16:144; 23:51,70
G109D	West of Hwy. 251	766.9	706.9-696.9	02/25/94	16:112; 23:53,70
G109D	West of Hwy. 251	766.9	706.9-696.9	02/23/95	16:149; 23:53,70
G110S	West of Hwy. 251	745.4	724.4-714.4	02/23/95	16:150; 23:54,70

Logs for residential wells that are in the same subdivisions, (but not utilized for scoring purposes) show that most wells draw from the sand and gravel aquifer at depths of 60 to 65 ft. below ground surface (21:54-80). Also, the Illinois State Water Survey Private Well Database shows that the vast majority of wells in the area (T. 46N, R.2E, Section 29) are at depths of 60 - 70 ft. below ground surface (27:all).

In the following table, these definitions apply:
1,1-DCE: 1,1-Dichloroethylene
1,1-DCA: 1,1-Dichloroethane
1,1,1-TCA: 1,1,1-Trichloroethane
TCE: Trichloroethylene
cis-1,2-DCE: cis-1,2-Dichloroethylene
1,2-DCE (total): 1,2-Dichloroethylene (total)
PCE: Perchloroethylene (= Tetrachloroethylene)
CRQL: Contract Required Quantitation Limit

The Sample Quantitation Limit is not available for the samples in the following table, which were analyzed under the EPA Contract Laboratory Program. Therefore, the Contract Required Quantitation Limit (CRQL) is used, as directed in the Hazard Ranking System; Final Rule, Table 2-3, page 51589.

Sample ID	Hazardous Substances	Conc. ug/l	CRQL ug/l	References
G103	1,1,1-TCA TCE	19 31	10 10	13:2-15,62-63; 28:all
G104	1,1,1-TCA TCE	15 23	10 10	13:2-15,64-65; 28:all
G105	1,1,1-TCA TCE	13 20	10 10	13:2-15,66-67; 28:all

Sample ID	Hazardous Substances	Conc. ug/l	CRQL ug/l	References
G119	1,1,1-TCA TCE	19 29	10 10	13:16-29, 94-95; 28:all
G120	1,1,1-TCA TCE	14 24	10 10	13:16-29, 96-97; 28:all
G121	1,1,1-TCA TCE	10 18	10 10	13:16-29, 98-99; 28:all
G122	1,1,1-TCA TCE	17 25	10 10	13:16-29, 100-101; 28:all
G123	1,1,1-TCA TCE	22 23	10 10	13:16-29, 102-103; 28:all
G124	1,1,1-TCA TCE	17 30	10 10	13:16-29, 104-105; 28:all
G125	TCE	19	10	13:16-29, 106-107; 28:all
G129	1,1,1-TCA TCE	14 25	10 10	13:30-43, 114-115; 28:all
G130	TCE	17	10	13:30-43, 116-117; 28:all
G131	1,1,1-TCA TCE	22 20	10 10	13:30-43, 118-119; 28:all
G132	1,1,1-TCA TCE	12 18	10 10	13:30-43, 120-121; 28:all
G134	1,1,1-TCA TCE	16 25	10 10	13:30-43, 124-125; 28:all

Sample ID	Hazardous Substances	Conc. ug/l	CRQL ug/l	References
G149	1,1,1-TCA TCE	13 22	10 10	13:44-57, 154-155; 28:all
G152	1,2-DCE (TOTAL) 1,1,1-TCA TCE PCE	2 18 6 2	2 2 2 2	14:31-32; 28:all
G153	1,2-DCE (TOTAL) 1,1,1-TCA TCE PCE	5 21 15 4	2 2 2 2	14:33-34; 28:all
G154	Chloromethane 1,1-DCA 1,2-DCE (TOTAL) 1,1,1-TCA TCE PCE	5 2 8 18 22 5	2 2 2 2 2 2	14:35-36; 28:all
G155	Chloromethane 1,2-DCE (TOTAL) 1,1,1-TCA TCE PCE	2 3 21 10 2	2 2 2 2 2	14:37-38; 28:all
G156	1,2-DCE (TOTAL) 1,1,1-TCA TCE PCE	2 21 6 2	2 2 2 2	14:39-40; 28:all
G157	1,2-DCE (TOTAL) 1,1,1-TCA TCE PCE	2 17 6 2	2 2 2 2	14:41-42; 28:all
G167	1,2-DCE (TOTAL) 1,1,1-TCA TCE PCE	3 22 12 2	2 2 2 2	14:43-44; 28:all
G168	Chloromethane 1,2-DCE (TOTAL) 1,1,1-TCA TCE	4 3 16 13	2 2 2 2	14:45-46; 28:all

The Sample Quantitation Limit is not available for the samples in the following table, which were analyzed using 524.2 drinking water methods rather than under the EPA Contract Laboratory Program. Therefore, the Method Detection Limit (MDL) is used, as directed in the Hazard Ranking System; Final Rule, Table 2-3, page 51589.

Sample ID	Hazardous Substances	Conc. ug/l	MDL ug/l	References
G188	1,1-DCE 1,1,1-TCA TCE	0.74 11 2.1	0.069 0.105 0.065	14:106-108; 9:all; 32:3
G190	1,1-DCE 1,1-DCA 1,1,1-TCA TCE cis-1,2-DCE	1.1 1.3 14 27 D 5.3	0.197 0.210 0.288 0.221 0.511	14:129-134; 9:all; 32:6
G192	1,1,1-TCA TCE	1.6 6.0	0.288 0.221	14:135-137; 9:all; 32:6
G196	1,1-DCE 1,1,1-TCA TCE	1.8 28 D 5.7	0.197 0.288 0.221	14:138-143; 9:all; 32:6
G202	1,1-DCE 1,1-DCA 1,1,1-TCA TCE cis-1,2-DCE	1.3 1.1 19 7.3 1.0	0.197 0.210 0.288 0.221 0.511	14:144-146; 9:all; 32:6
G203	1,1-DCE 1,1-DCA 1,1,1-TCA TCE cis-1,2-DCE	1.7 1.2 20 8.2 1.2	0.197 0.210 0.288 0.221 0.511	14:147-149; 9:all; 32:6
G206	1,1-DCE 1,1-DCA 1,1,1-TCA TCE	2.4 1.6 34 D 15	0.197 0.210 0.288 0.221	14:169-174; 9:all; 32:6
G212	1,1,1-TCA	21 D	0.288	14:175-180; 9:all; 32:6
G219	1,1,1-TCA TCE cis-1,2-DCE	5.1 11 1.4	0.288 0.221 0.511	14:184-186; 9:all; 32:6

Sample ID	Hazardous Substances	Conc. ug/l	MDL ug/l	References
G283	Methylene Chloride	1.2	0.455	14:331-333;
	1,1-DCE	1.4	0.560	9:all;
	1,1-DCA	1.2	0.402	33:2
	1,1,1-TCA	16	0.374	
	TCE	11	0.519	
	cis-1,2-DCE	1.6	0.609	
G290	1,1-DCE	1.6	0.560	14:334-336;
	1,1-DCA	1.2	0.402	9:all;
	1,1,1-TCA	17	0.374	33:2
	TCE	22	0.519	
	cis-1,2-DCE	3.1	0.609	
G293	Methylene Chloride	0.8	0.455	14:337-339;
	1,1-DCE	1.0	0.560	9:all;
	1,1-DCA	0.8	0.402	33:2
	1,1,1-TCA	14	0.374	
	TCE	12	0.519	
	cis-1,2-DCE	1.4	0.609	
G296	Methylene Chloride	0.5	0.455	14:340-342;
	1,1-DCE	1.3	0.560	9:all;
	1,1-DCA	1.2	0.402	33:2
	1,1,1-TCA	18	0.374	
	TCE	19	0.519	
	cis-1,2-DCE	2.5	0.609	
G304	1,1-DCE	2	0.560	14:362-364;
	1,1-DCA	2.2	0.402	9:all;
	1,1,1-TCA	19	0.374	33:2
	TCE	25	0.519	
G316	1,1-DCE	1.4	0.560	14:384-386;
	1,1-DCA	1.7	0.402	9:all;
	1,1,1-TCA	16	0.374	33:2
	TCE	31	0.519	
	cis-1,2-DCE	4.4	0.609	
G317	1,1-DCE	2.8	0.560	14:387-389;
	1,1-DCA	2.1	0.402	9:all;
	1,1,1-TCA	29	0.374	33:2
	TCE	24	0.519	
	cis-1,2-DCE	2.8	0.609	
G318	1,1-DCE	0.6	0.560	14:390-392;
	1,1-DCA	1.2	0.402	9:all;
	1,1,1-TCA	9.7	0.374	33:2
	TCE	17	0.519	
	cis-1,2-DCE	2.2	0.609	

Sample ID	Hazardous Substances	Conc. ug/l	MDL ug/l	References
G365	1,1-DCE 1,1-DCA 1,1,1-TCA TCE cis-1,2-DCE	1.2 1.1 16 17 2.7	0.560 0.402 0.374 0.519 0.609	14:480-482; 9:all; 33:2
G101D (1995)	TCE	3	0.125	14:516-518; 9:all; 32:8
G103S (1995)	1,1,1-TCA PCE	3 40 D	0.090 0.090	14:522-527; 9:all; 32:8
G104S (1995)	1,1-DCE 1,1,1-TCA TCE	2 12 0.9	0.136 0.090 0.125	14:528-530; 9:all; 32:8
G105D (1994)	1,1-DCA 1,1,1-TCA TCE cis-1,2-DCE PCE	1.1 8.9 15 5.7 3.2	0.210 0.~~200~~, 283 0.221 0.511 0.202	14:421-423; 9:all; 32:6
G105D (1995)	1,1-DCE 1,1-DCA 1,1,1-TCA TCE cis-1,2-DCE PCE	1 1 9 15 5 4	0.136 0.097 0.090 0.125 0.067 0.090	14:531-533; 9:all; 32:8
G106S (1995)	1,1,1-TCA TCE	1.0 3	0.090 0.125	14:534-536; 9:all; 32:8
G107D (1995)	1,1-DCE 1,1,1-TCA PCE	0.7 8 11	0.136 0.090 0.090	14:537-539; 9:all: 32:8
G108D (1995)	1,1-DCE 1,1,1-TCA PCE	0.5 7 3	0.136 0.090 0.090	14:540-542; 9:all; 32:8
G109D (1995)	1,1-DCE 1,1,1-TCA TCE cis-1,2-DCE PCE	0.8 8 3 6 7	0.136 0.090 0.125 0.067 0.090	14:543-545; 9:all; 32:8
G110S	1,1-DCE 1,1,1-TCA TCE	0.5 4 2	0.136 0.090 0.125	14:546-548; 9:all; 32:8

- Level I Samples

Sample ID	Hazardous Substance	Hazardous Substance Concentration (ug/l)	Benchmark, Benchmark Concentration (ug/l)	Reference
G103	TCE	31	MCL, 5	2:44; 13:62-63
G104	TCE	23	MCL, 5	2:44; 13:64-65
G105	TCE	20	MCL, 5	2:44; 13:66-67
G106	TCE	23	MCL, 5	2:44; 13:68-69
G107	TCE	35	MCL, 5	2:44; 13:70-71
G108	TCE	20	MCL, 5	2:44; 13:72-73
G109	TCE	17	MCL, 5	2:44; 13:74-75
G110	TCE	18	MCL, 5	2:44; 13:76-77
G112	TCE	23	MCL, 5	2:44; 13:80-81
G113	TCE	38	MCL, 5	2:44; 13:82-83
G114	TCE	36	MCL, 5	2:44; 13:84-85
G115	TCE	27	MCL, 5	2:44; 13:86-87
G116	TCE	27	MCL, 5	2:44; 13:88-89
G117	TCE	24	MCL, 5	2:44; 13:90-91
G118	TCE	19	MCL, 5	2:44; 13:92-93
G119	TCE	29	MCL, 5	2:44; 13:94-95
G120	TCE	24	MCL, 5	2:44; 13:96-97
G121	TCE	18	MCL, 5	2:44; 13:98-99
G122	TCE	25	MCL, 5	2:44; 13:100-101
G123	TCE	23	MCL, 5	2:44; 13:102-103
G124	TCE	30	MCL, 5	2:44; 13:104-105
G125	TCE	19	MCL, 5	2:44; 13:106-107
G129	TCE	25	MCL, 5	2:44; 13:114-115

Sample ID	Hazardous Substance	Hazardous Substance Concentration (ug/l)	Benchmark, Benchmark Concentration (ug/l)	Reference
G167	TCE PCE	12 2	MCL,5 CA, 1.6	2:43,44; 14:43-44
G168	TCE	13	MCL,5	2:44; 14:45-46
G170	1,1-DCE TCE	2 6	CA, 0.14 MCL, 5	2:32,44; 14:66-67
G184	TCE	10	MCL,5	2:44; 14:86-87
G188	1,1-DCE	0.74	CA, 0.14	2:32; 14:106-108
G190	1,1-DCE TCE	1.1 27D	CA, 0.14 MCL,5	2:32,44; 14:129-134
G192	TCE	6.0	MCL,5	2:44; 14:135-137
G196	1,1-DCE TCE	1.8 5.7	CA, 0.14 MCL,5	2:32,44; 14:138-143
G202	1,1-DCE TCE	1.3 7.3	CA, 0.14 MCL,5	2:32,44; 14:144-146
G203	1,1-DCE TCE	1.7 8.2	CA, 0.14 MCL, 5	2:32,44; 14:147-149
G206	1,1-DCE TCE	2.4 15	CA, 0.14 MCL, 5	2:32,44; 14:169-174
G219	TCE	11	MCL,5	2:44; 14:184-186
G229	TCE	20.00	MCL,5	2:44; 14:206-208
G247	1,1-DCE TCE	2.00 31.00D	CA, 0.14 MCL,5	2:32,44; 14:239-244
G248	1,1-DCE TCE	2.60 38.00D	CA, 0.14 MCL,5	2:32,44; 14:245-250

Sample ID	Hazardous Substance	Hazardous Substance Concentration (ug/l)	Benchmark, Benchmark Concentration (ug/l)	Reference
G338	1,1-DCE TCE PCE	0.9 23 4.0	CA, 0.14 MCL,5 CA, 1.6	2:32,43,44; 14:424-426
G357	1,1-DCE TCE	1.4 12	CA, 0.14 MCL,5	2:32,44; 14:446-448
G358	1,1-DCE TCE	2.1 28	CA, 0.14 MCL,5	2:32,44; 14:468-470
G360	1,1-DCE TCE	1.2 28	CA, 0.14 MCL,5	2:32,44; 14:471-473
G362	1,1-DCE TCE	2.1 27	CA, 0.14 MCL,5	2:32,44; 14:474-476
G364	1,1-DCE TCE	1.3 11	CA, 0.14 MCL,5	2:32,44; 14:477-479
G365	1,1-DCE TCE	1.2 17	CA, 0.14 MCL,5	2:32,44; 14:480-482

D - all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is reanalyzed at a higher dilution factor as in the "E" flag, the "DL" suffix is appended to the sample number of the Form I for the diluted sample, and all concentration values are flagged with the "D" flag.

CA - Cancer Risk
MCL - Maximum Contaminant Level

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17. Illinois Department of Energy and Natural Resources, State Geological Survey, 1967. Sand And Gravel Resources Along The Rock River In Illinois. 5 pages of 17 pages are included.

18. Illinois Department of Energy and Natural Resources, State Geological Survey, 1960, Reprinted 1972. Ground-Water Geology Of Winnebago County, Illinois. 42 pages of 64 pages are included.

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24. Dunn, Greg, Illinois EPA, June 22, 1996. Memorandum to Bureau of Land File. 14 pages.

25. Dunn, Greg, Illinois EPA, December 19-21, 1994. Site Inspection Document. 57 pages.

26. Wells, Dan, Rockford FOS, Illinois EPA, January 10, 1994. Memorandum to Division File. 12 pages.

27. Illinois Department of Energy and Natural Resources, State Water Survey Division, October 21, 1993. Private Well Database. 14 pages.

28. Bridges, Chris, Division of Laboratories, Quality Assurance Section, Illinois EPA, December 8, 1994. Memorandum to Tom Crause, Bureau of Land, Illinois EPA. 23 pages.

29. Willman, Jerry, Project Manager, Illinois EPA, May 28, 1997 Draft memorandum to Ali Hyderi and Judy Triller. 7 pages.

30. U.S. Department of Commerce, Bureau of the Census, 1990 Census of Population, General Population Characteristics, Illinois. June 1992. 3 pages included.

31. Illinois Department of Registration and Education, State Geological Survey, 1975. Handbook of Illinois Stratigraphy. 22 pages of 261 pages are included.

32. Bridges, Chris, Division of Laboratories, Quality Assurance Section, Illinois EPA, March 9, 1998. Memorandum to Peter Sorensen, Bureau of Land, Illinois EPA. 9 pages.

33. Bridges, Chris, Division of Laboratories, Quality Assurance Section, Illinois EPA, March 9, 1998. Memorandum to Peter Sorensen, Bureau of Land, Illinois EPA. 2 pages.

APPENDIX A.3

IEPA
1994 AND 1995
GROUNDWATER MONITORING WELL DATA

CONCENTRATIONS IN UG/L (PPB)

Well	Date	TCE	PCE	1,1-DCE	1,1-DCA	1,1,1 TCA	cis-1,2 DCE	Trans-1,2-DCE
G101S	03-24-94	0.7	--	--	--	--	--	--
	02-23-95	0.6	--	--	--	--	--	--
G101D	03-24-94	1.6	--	--	--	--	--	--
	02-23-95	3.0	--	--	--	--	--	--
G102S	03-23-94	--	--	--	--	--	--	--
	02-21-95	--	--	--	--	--	--	--
	12-05-96	--	--	--	--	--	--	
G102D	03-23-94	--	--	--	--	--	--	--
	02-21-95	--	--	--	--	--	--	--
G103S	03-23-94	--	17.0	--	--	5.7	--	--
	02-21-95	--	40.0	--	--	3.0	--	--
	12-05-96	--	8.6	--	--	--	--	
G103D	03-23-94	--	--	--	--	--	--	--
	02-21-95	--	1.0	1.0	--	16.0	--	--
G104S	03-23-94	0.7	--	--	--	12.0	--	--
	02-22-95	0.9	--	2.0	--	12.0	--	--
G104D	03-23-94	--	--	--	--	8.9	--	--
	02-22-95	0.2J	--	1.0	--	9.0	--	--
G105S	03-23-94	14.0	4.1	--	0.7	7.5	4.7	--
	02-22-95	14.0	6.0	0.8	0.7	6.0	4.0	--
G105D	03-23-94	15.0	3.2	--	1.1	8.9	5.7	--
	02-22-95	15.0	4.0	1.0	1.0	9.0	5.0	--
G106S	03-24-94	2.9	0.2	--	--	--	--	--
	02-22-95	3.0	--	--	--	1.0	--	--
G106D	03-24-94	2.5	--	--	--	--	--	--
	02-22-95	3.0	0.4J	--	--	2.0	0.6J	--
G107S	03-25-94	--	2.3	--	--	0.5	--	--
	02-21-95	--	--	--	--	--	--	--
G107D	03-25-94	--	15.0	--	--	8.8	--	--
	02-21-95	--	11.0	0.7	--	8.0	--	--
G108S	03-25-94	--	--	--	--	--	--	--
	02-21-95	0.4J	--	--	--	1.0	--	--
G108D	03-25-94	--	3.7	--	2.2	9.0	2.5	--
	02-21-95	0.3J	3.0	0.5	--	7.0	--	--
G109S	03-25-94	1.4	0.7	--	--	0.4	2.9	--
	02-23-95	6.0	0.6J	--	--	2.0	4.0	--
G109D	03-25-94	3.3	4.1	--	0.6	9.5	7.0	--
	02-23-95	3.0	7.0	0.8	0.7J	8.0	6.0	--
G110S	03-24-94	1.2	0.4	--	--	3.3	--	--
	02-23-95	2.0	0.8J	0.5	--	4.0	--	--
G110D	03-24-94	0.5	--	--	--	--	--	--
	02-23-95	0.6	--	--	--	--	--	--
G111	02-21-95	--	--	--	--	--	--	--
	12-05-96	--	--	--	--	--	--	
G112	02-21-95	--	--	--	--	--	--	--
G113	02-21-95	--	2.0	--	--	--	--	--
G114	02-21-95	--	0.8J	--	--	3.0	--	--
	12-05-96	--	--	--	--	--	--	

NOTES:

TCE - Trichloroethene
1,1-DCE - 1,1-Dichloroethene
1,1,1-TCA - 1,1,1-Trichloroethane
trans-1,2-DCE - trans-1,2-Dichloroethene
PCE - Tetrachloroethene
1,1-DCA - 1,1-Dichloroethane
cis-1,2-DCE - cis-1,2-Dichloroethene
J - indicates an estimated value

APPENDIX A.4

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

1998 ANALYTICAL DATA

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 5
77 West Jackson Boulevard
Chicago, Illinois 60604

CHAIN OF CUSTODY RECORD

PROJ. NO.:

PROJECT NAME: Evergreen Maner

Activity Code:

SAMPLERS: (Print Name and Sign) CHAD Gibson [signature]

5-259

NO. OF CONTAINERS

Analysis: VOC

EIS#

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	VOC			EIS#			TAG NUMBERS
S-1	5-22-98			X	4536 Matthew	3	X			51	140		QA/QC Level II
S-2	↓			X	4539 Matthew	3	X			51	141		14 Day TAT Verbal / 3 week Hard Copy
S-3A				X	4463 Adele	3	X			51	142		-samples preserved w/ HCL
S-3B				X	4463 Adele-Inside	3	X			51	143		-Samples kept refridgerated
S-4				X	4427 Adele	3	X			51	144		
S-5				X	4444 Hononegah Road	3	X			51	145		Results to:
S-6				X	12031 Blue Spruce	3	X			51	146		Dave Hendren
S-7				X	11731 Baker Lane	3	X			51	147		Ecology & Environment
S-8				X	11709 Baker Lane	3	X			51	148		33 N. Dearborn
S-9				X	11412 Tanawingo	3	X			51	149		Chicago, IL, 60602
S-10				X	11593 Wagon Lane	3	X			51	150		Fax: 312-578-9345
S-11				X	4295 Buggywhip	3	X			51	151		Phone: 312-578-9243
S-12				X	4110 Valerie	3	X			51	152		
S-13	↓			X		3	X			51	153		all recd cold & ok

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time
[signature]	5/26 0945	[signature]	5-27-98 1100
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time

Ship To: EIS Analytical Service
1701 N. Ironwood Dr. Suite B
South Bend, IN 46635
(219) 277-5715

ATTN:

Airbill Number: 8018335529408

Chain of Custody Seal Numbers: 50186, 50187

Distribution: White - Accompanies Shipment; Pink - Coordinator Field Files; Yellow - Laboratory File

Table 4-1

COMPARISON OF HISTORICAL AND ANALYTICAL RESULTS
EVERGREEN MANOR SITE
ROSCOE, WINNEBAGO COUNTY, ILLINOIS

Sample Location	Sample Date	Parameter (mg/L)						
		1,1-dichloroethane	1,1-dichloroethene	cis-1,2-dichloroethene	Tetrachloroethene	1,1-trichloroethane	Trichloroethene	
S-1	5/22/98	0.00085	0.00072	0.0025	0.005	0.0046	0.0045	
S-2	5/22/98	0.00076	0.0006	0.003	0.0051	0.0035	0.0075	J
S-2	5/16/91	ND	0.0022	ND	0.0027	0.03	0.033	
S-2	2/19/91	0.0018	0.0022	0.0089	0.0006	0.0265	0.0619	
S-3A	5/22/98	0.00079	0.00065	0.0032	0.0053	0.0039	0.0072	J
S-3B	5/22/98	0.0012	0.0008	0.0033	ND	0.011	ND	
S-3	9/24/91	ND	ND	ND	ND	ND	ND	
S-3	9/24/91	0.0015	0.0044	0.0093	0.0018	0.0465	0.0665	
S-3	5/16/91	0.0015	0.0017	ND	0.0007	0.024	0.024	
S-3	4/23/91	0.0031	0.0056	0.009	0.0016	0.0377	0.0581	
S-3	1/10/91	0.0028	0.0072	0.009	0.0009	0.0467	0.059	
S-4	5/22/98	0.00073	0.00068	0.002	0.0032	0.0044	0.0039	D
S-4	9/23/91	0.0	0.0029	0.0026	0.0004	0.0387	0.0125	
S-5	5/22/98	0.0005	0.00055	0.0015	0.0031	0.0024	0.007	R
S-5	1/10/91	0.002	0.0034	0.0064	0.0001	0.0281	0.0551	
S-6	5/22/98	0.00062	0.00065	0.003	0.0015	0.0038	0.013	D
S-6	12/11/90	0.0025	0.0021	0.0051	ND	0.0335	0.0634	
S-7	5/22/98	ND	ND	ND	ND	ND	0.00051	U

Table 4-1

COMPARISON OF HISTORICAL AND ANALYTICAL RESULTS
EVERGREEN MANOR SITE
ROSCOE, WINNEBAGO COUNTY, ILLINOIS

Sample Location	Sample Date	Parameter (mg/L)					
		1,1-dichloroethane	1,1-dichloroethene	cis-1,2-dichloroethene	Tetrachloroethene	1,1-trichloroethane	Trichloroethene
S-7	1/22/91	ND	ND	ND	ND	ND	ND
S-8	5/22/98	ND	ND	ND	ND	ND	0.00091
S-8	3/19/91	ND	ND	ND	ND	ND	0.002
S-9	5/22/98	ND	ND	ND	ND	0.00056	0.0012
S-9	9/23/91	ND	ND	ND	ND	ND	ND
S-10	5/22/98	0.0011	0.0016	0.0022	ND	ND	0.018
S-10	2/19/91	0.0017	0.0017	0.001	ND	0.0242	0.0136
S-11	5/22/98	0.00061	0.00067	0.017	ND	0.0031	0.011
S-11	2/5/91	0.001	ND	0.0046	ND	0.0116	0.019
S-12	5/22/98	ND	ND	ND	ND	ND	ND
S-12	9/23/91	ND	ND	ND	ND	ND	ND
S-13	5/22/98	ND	ND	ND	ND	ND	ND

Key:

ND = Not detected.
mg/L = Milligrams per liter.

Source: EIS Analytical Services, South Bend, Indiana (Analytical TDD S05-9805-807).

APPENDIX A.5

ILLINOIS DEPARTMENT OF PUBLIC HEALTH

ANALYTICAL DATA

Illinois Department of
Public Health

John R. Lumpkin, M.D., M.P.H., Director

4302 North Main Street • Rockford, Illinois 61103-1109

May 3, 1996

#112109301H

Dave Wiersbe
11975 Blue Spruce Drive
Roscoe, Illinois 61073

Dear Mr. Wiersbe:

This letter is written in reference to water samples taken from your home on April 22, 1996. Two water samples were collected, one before the filter and one after the filter. These samples were sent to our toxicology laboratory in Springfield for analysis.

Your water sample was analyzed for chemicals called volatile organic compounds (VOCs). Of the compounds sampled for, the following were detected above detection limits (see attached).

1,1-Dichloroethylene	1.1	ND	7 (MCL)
Cis 1,2-Dichloroethylene	4.4	ND	70 (MCL)
1,1,1-Trichloroethane	11	ND	200 (MCL)
1,1-Dichloroethane	1.1	ND	28 (CDWG)
Trichloroethylene	22	0.8	5 (MCL)

ppb - part per billion; (one part per billion is equivalent to one drop in 16,000 gallons of water)
CDWG - California Drinking Water Guidelines
ND - Not Detected

Currently, there are no standards for these compounds in private water supplies. However, standards for these compounds do exist for public water supplies. These standards are called Maximum Contaminant Levels (MCLs). MCLs represent contaminant concentrations that the U.S. Environmental Protection Agency deems protective of public health (considering the availability and economics of water treatment technology) over a lifetime of use. The Illinois Department of Public Health uses MCLs and other comparison values in evaluating private water supplies.

The concentration of detected VOCs in your filtered water sample are well below comparison values.

Illinois Department of
Public Health

John R. Lumpkin, M.D., M.P.H., Director

4302 North Main Street • Rockford, Illinois 61103-1209

May 3, 1996

#1121093018

Mike Bares
11593 Wagon Lane
Roscoe, Illinois 61073

Dear Mr. Bares:

This letter is written in reference to a water sample collected from your home on April 22, 1996. The sample was collected after the filter. This sample was sent to our toxicology laboratory in Springfield for analysis.

Your water sample was analyzed for chemicals called volatile organic compounds (VOCs). Of the compounds sampled for, the following were detected above detection limits (see attached).

1,1-Dichloroethylene	1.6	7 (MCL)
Cis 1,2-Dichloroethylene	2.1	70 (MCL)
1,1,1-Trichloroethane	19	200 (MCL)
Carbon Tetrachloride	ND	5 (MCL)
Trichloroethylene	1.1	5 (MCL)
1,1 Dichloroethane	1.7	28 (CDWG)

ppb - part per billion: (one part per billion is equivalent to one drop in 16,000 gallons of water)
ND - Not Detected
CDWG - California Drinking Water Guidelines

Currently, there are no standards for these compounds in private water supplies. However, standards for these compounds do exist for public water supplies. These standards are called Maximum Contaminant Levels (MCLs). MCLs represent contaminant concentrations that the U.S. Environmental Protection Agency deems protective of public health (considering the availability and economics of water treatment technology) over a lifetime of use. The Illinois Department of Public Health uses MCLs and other comparison values in evaluating private water supplies.

The concentration of detected VOCs in your filtered water sample are below the comparison values. However, please note that there are detectable amounts of these compounds which may indicate that the filter needs to be serviced in the near future.

Illinois Department of
Public Health

John R. Lumpkin, M.D., M.P.H., Director

4302 North Main Street • Rockford, Illinois 61103-1109

May 3, 1996

#112109301R

Ron Shelton
11708 Balsa Lane
Roscoe, Illinois 61073

Dear Mr. Shelton:

This letter is written in reference to a water sample collected from your home on April 22, 1996. This sample was sent to our toxicology laboratory in Springfield for analysis.

Your water sample was analyzed for chemicals called volatile organic compounds (VOCs). Of the compounds sampled for, the following was detected above detection limits (see attached).

Trichloroethylene	1.0	5 (MCL)

ppb - part per billion; (one part per billion is equivalent to one drop in 16,000 gallons of water)

Currently, there are no standards for these compounds in private water supplies. However, standards for these compounds do exist for public water supplies. These standards are called Maximum Contaminant Levels (MCLs). MCLs represent contaminant concentrations that the U.S. Environmental Protection Agency deems protective of public health (considering the availability and economics of water treatment technology) over a lifetime of use. The Illinois Department of Public Health uses MCLs and other comparison values in evaluating private water supplies.

Based on the concentrations of VOCs detected in your water supply, we do not recommend any changes in your current water use. Please be aware that the possibility remains for these contaminants to impact your water supply and we continue to recommend that you have your supply tested on an annual basis.

If you have any questions, please contact our Rockford Regional Office at 4302 North Main Street, Rockford, Illinois 61103, telephone 815/987-7511.

Sincerely,

Roger J. Suden, P.E.
Regional Engineer

SJ:sj
cc - Central Office
- Rockford Regional Office
- Winnebago Co. Health Dept.
enc.

Illinois Department of
Public Health

John R. Lumpkin, M.D., M.P.H., Director

4302 North Main Street • Rockford, Illinois 61103-1109

May 3, 1996

#112109301H

Dan Syverson
4175 Buggywhip Lane
Roscoe, Illinois 61073

Dear Mr. Syverson:

This letter is written in reference to a water sample collected from your home on April 22, 1996. This sample was sent to our toxicology laboratory in Springfield for analysis.

Your water sample was analyzed for chemicals called volatile organic compounds (VOCs). Of the compounds sampled for, the following was detected above detection limits (see attached).

Trichloroethylene	2.0	5 (MCL)
1,1-Dichloroethylene	0.6	7 (MCL)
1,1,1-Trichloroethane	6.6	200 (MCL)

ppb - part per billion; (one part per billion is equivalent to one drop in 16,000 gallons of water)

Currently, there are no standards for these compounds in private water supplies. However, standards for these compounds do exist for public water supplies. These standards are called Maximum Contaminant Levels (MCLs). MCLs represent contaminant concentrations that the U.S. Environmental Protection Agency deems protective of public health (considering the availability and economics of water treatment technology) over a lifetime of use. The Illinois Department of Public Health uses MCLs and other comparison values in evaluating private water supplies.

Based on the concentrations of VOCs detected in your water supply, we do not recommend any changes in your current water use. Please be aware that the possibility remains for these contaminants to impact your water supply and we continue to recommend that you have your supply tested on an annual basis.

Illinois Department of
Public Health

John R. Lumpkin, M.D., M.P.H., Director

4302 North Main Street • Rockford, Illinois 61103-1209

May 7, 1996

#112109301H

Ken Dahlstrand
4463 Adele
Roscoe, Illinois 61073

Dear Mr. Dahlstrand:

This letter is written in reference to a water sample taken from your home on April 22, 1996. The sample was collected from the front outside tap, which we assume is unfiltered. This sample was sent to our toxicology laboratory in Springfield for analysis.

Your water sample was analyzed for chemicals called volatile organic compounds (VOCs). Of the compounds sampled for, the following were detected above detection limits (see attached).

1,1-Dichloroethylene	0.5	7 (MCL)
Cis 1,2-Dichloroethylene	3.6	70 (MCL)
1,1,1-Trichloroethane	9.9	200 (MCL)
1,1-Dichloroethane	0.8	28 (CDWG)
Trichloroethylene	9.2	5 (MCL)
Tetrachloroethylene	4.4	5 (MCL)

ppb - part per billion; (one part per billion is equivalent to one drop in 16,000 gallons of water)
CDWG - California Drinking Water Guidelines

Currently, there are no standards for these compounds in private water supplies. However, standards for these compounds do exist for public water supplies. These standards are called Maximum Contaminant Levels (MCLs). MCLs represent contaminant concentrations that the U.S. Environmental Protection Agency deems protective of public health (considering the availability and economics of water treatment technology) over a lifetime of use. The Illinois Department of Public Health uses MCLs and other comparison values in evaluating private water supplies.

Although the concentration of detected VOCs in your raw water sample appear to be dropping, the level of trichloroethylene is still above our comparison value.

Illinois Department of
Public Health

John R. Lumpkin, M.D., M.P.H., Director

4302 North Main Street • Rockford, Illinois 61103-1109

May 10, 1996

#112109301E

Phil Rhymer
4444 Kononegah Road
Roscoe, Illinois 61073

Dear Mr. Rhymer:

This letter is written in reference to a water sample taken from your home on April 22, 1996. This sample was sent to our toxicology laboratory in Springfield for analysis.

Your water sample was analyzed for chemicals called volatile organic compounds (VOCs). Of the compounds sampled for, the following were detected above detection limits (see attached).

Cis 1,2-Dichloroethylene	4.7	70 (MCL)
1,1,1-Trichloroethane	5.6	200 (MCL)
1,1-Dichloroethane	0.7	28 (CDWG)
Trichloroethylene	12	5 (MCL)
Tetrachloroethylene	2.2	5 (MCL)

ppb - part per billion; (one part per billion is equivalent to one drop in 16,000 gallons of water)
CDWG - California Drinking Water Guidelines

Currently, there are no standards for these compounds in private water supplies. However, standards for these compounds do exist for public water supplies. These standards are called Maximum Contaminant Levels (MCLs). MCLs represent contaminant concentrations that the U.S. Environmental Protection Agency deems protective of public health (considering the availability and economics of water treatment technology) over a lifetime of use. The Illinois Department of Public Health uses MCLs and other comparison values in evaluating private water supplies.

As you can see from the above results, the level of trichloroethylene detected in your water supply is still above the MCL.

As stated in previous correspondence, there is a great deal of uncertainty about possible health effects associated with long term exposure to low levels of VOCs. Based on this fact and the current levels of VOCs detected in your water supply, it is still recommended that you eliminate or reduce your exposure to these compounds whenever possible.

Illinois Department of
Public Health

John R. Lumpkin, M.D., M.P.H., Director

4302 North Main Street • Rockford, Illinois 61103-1209

May 10, 1996

#112109301H

Nickolas Metrakoudes
4539 Mathew Ave
Roscoe, Illinois 61073

Dear Mr. Metrakoudes:

This letter is written in reference to a water sample taken from your home on April 22, 1996. This sample was sent to our toxicology laboratory in Springfield for analysis.

Your water sample was analyzed for chemicals called volatile organic compounds (VOCs). Of the compounds sampled for, the following were detected above detection limits (see attached).

Cis 1,2-Dichloroethylene	4.8	70 (MCL)
1,1,1-Trichloroethane	6.2	200 (MCL)
1,1-Dichloroethane	0.6	28 (CDWG)
Trichloroethylene	13	5 (MCL)
Tetrachloroethylene	5.1	5 (MCL)

ppb - part per billion; (one part per billion is equivalent to one drop in 16,000 gallons of water)
CDWG - California Drinking Water Guidelines

Currently, there are no standards for these compounds in private water supplies. However, standards for these compounds do exist for public water supplies. These standards are called Maximum Contaminant Levels (MCLs). MCLs represent contaminant concentrations that the U.S. Environmental Protection Agency deems protective of public health (considering the availability and economics of water treatment technology) over a lifetime of use. The Illinois Department of Public Health uses MCLs and other comparison values in evaluating private water supplies.

As you can see from the above results, the level of trichloroethylene detected in your water supply is still above the MCL.

As stated in previous correspondence, there is a great deal of uncertainty about possible health effects associated with long term exposure to low levels of VOCs. Based on this fact and the current levels of VOCs detected in your water supply, it is still recommended that you eliminate or reduce your exposure to these compounds whenever possible.

Illinois Department of
Public Health

John R. Lumpkin, M.D., M.P.H., Director

4302 North Main Street • Rockford, Illinois 61103-1109

May 10, 1996

#1121093018

Donald Rogers
4536 Mathew Ave
Roscoe, Illinois 61073

Dear Mr. Rogers:

This letter is written in reference to a water sample taken from your home on April 22, 1996. The sample was collected from your new well. This sample was sent to our toxicology laboratory in Springfield for analysis.

Your water sample was analyzed for chemicals called volatile organic compounds (VOCs). Of the compounds sampled for, the following were detected above detection limits (see attached).

Bromoform	0.7	100 (MCL)
Cis 1,2-Dichloroethylene	3.0	70 (MCL)
1,1,1-Trichloroethane	6.7	200 (MCL)
1,1-Dichloroethane	0.7	28 (CDWG)
Trichloroethylene	5.2	5 (MCL)
Tetrachloroethylene	3.3	5 (MCL)

ppb - part per billion; (one part per billion is equivalent to one drop in 16,000 gallons of water)
CDWG - California Drinking Water Guidelines

Currently, there are no standards for these compounds in private water supplies. However, standards for these compounds do exist for public water supplies. These standards are called Maximum Contaminant Levels (MCLs). MCLs represent contaminant concentrations that the U.S. Environmental Protection Agency deems protective of public health (considering the availability and economics of water treatment technology) over a lifetime of use. The Illinois Department of Public Health uses MCLs and other comparison values in evaluating private water supplies.

The levels of VOCs detected in your water supply are at or below the MCLs and we do not recommend any changes in your current water use. However, this is the only sample we have from your new well and levels of VOCs can change over time. Based on this fact and previous results from your old well, we strongly recommend that you have your water resampled in 6 months.

Illinois Department of
Public Health

John R. Lumpkin, M.D., M.P.H., Director

4302 North Main Street • Rockford, Illinois 61103-1209

May 10, 1995

Dave Wiersbe
11975 Blue Spruce Drive
Roscoe, Illinois 61073

Dear Mr. Wiersbe:

This letter is written in reference to water samples taken from your home on April 4, 1995. These samples were sent to our toxicology laboratory in Springfield for analysis.

Your water sample was analyzed for chemicals called volatile organic compounds (VOCs). Of the compounds sampled for, the following were detected above detection limits (see attached)

1,1-Dichloroethylene	1.4	0.5	7 (MCL)
Cis 1,2-Dichloroethylene	4.5	1.1	70 (MCL)
1,1,1-Trichloroethane	12	2.9	200 (MCL)
Dichloromethane	0.5	ND	5 (MCL)
Trichloroethylene	26	9.2	5 (MCL)

ppb - part per billion; (one part per billion is equivalent to one drop in 16,000 gallons of water)

ND - Not Detected

Currently, there are no standards for these compounds in private water supplies. However, standards for these compounds do exist for public water supplies. These standards are called Maximum Contaminant Levels (MCLs). MCLs represent contaminant concentrations that the U.S. Environmental Protection Agency deems protective of public health (considering the availability and economics of water treatment technology) over a lifetime of use. The Illinois Department of Public Health uses MCLs and other comparison values in evaluating private water supplies.

The concentration of detected VOCs in your well range from below the MCLs to just above (e.g. trichloroethylene). Please note that the trichloroethylene concentration in the after filter result is in excess of the MCL. This indicates that the filter may be inadequate or needs to be serviced.

Illinois Department of
Public Health

John R. Lumpkin, M.D., M.P.H., Director

4302 North Main Street • Rockford, Illinois 61103-1209

May 10, 1995

Mike Baras
11593 Wagon Lane
Roscoe, Illinois 61073

Dear Mr. Baras:

This letter is written in reference to water samples taken from your home on April 4, 1995. These samples were sent to our toxicology laboratory in Springfield for analysis.

Your water sample was analyzed for chemicals called volatile organic compounds (VOCs). Of the compounds sampled for, the following were detected above detection limits (see attached).

1,1-Dichloroethylene	4.4	1.9	7 (MCL)
Cis 1,2-Dichloroethylene	2.7	0.9	70 (MCL)
1,1,1-Trichloroethane	24	17	200 (MCL)
Carbon Tetrachloride	ND	1.9	5 (MCL)
Trichloroethylene	22	ND	5 (MCL)
1,1 Dichloroethane	0.5	0.6	28 (CDWG)

ppb - part per billion; (one part per billion is equivalent to one drop in 16,000 gallons of water)
ND - Not Detected
CDWG - California Drinking Water Guidelines

Currently, there are no standards for these compounds in private water supplies. However, standards for these compounds do exist for public water supplies. These standards are called Maximum Contaminant Levels (MCLs). MCLs represent contaminant concentrations that the U.S. Environmental Protection Agency deems protective of public health (considering the availability and economics of water treatment technology) over a lifetime of use. The Illinois Department of Public Health uses MCLs and other comparison values in evaluating private water supplies.

The concentration of detected VOCs in your filtered water samples are below the comparison values. However, please note that there are detectable amounts of these compounds which may indicate that the filter needs to be serviced.

Illinois Department of
Public Health

John R. Lumpkin, M.D., M.P.H., Director

1302 North Main Street • Rockford, Illinois 61103-1209

May 10, 1995

Shirley Altenberg
4427 Adele Street
Roscoe, Illinois 61073

Dear Ms. Altenberg:

This letter is written in reference to water samples taken from your home on April 4, 1995. These samples were sent to our toxicology laboratory in Springfield for analysis.

Your water sample was analyzed for chemicals called volatile organic compounds (VOCs). Of the compounds sampled for, the following were detected above detection limits (see attached).

1,1-Dichloroethylene	1.7	1.5	7 (MCL)
Cis 1,2-Dichloroethylene	1.7	1.7	70 (MCL)
1,1,1-Trichloroethane	18	16	200 (MCL)
1,1,2-Trichloroethane	3	2.9	5 (MCL)
Trichloroethylene	9	8.6	5 (MCL)

ppb - part per billion; (one part per billion is equivalent to one drop in 16,000 gallons of water)

Currently, there are no standards for these compounds in private water supplies. However, standards for these compounds do exist for public water supplies. These standards are called Maximum Contaminant Levels (MCLs). MCLs represent contaminant concentrations that the U.S. Environmental Protection Agency deems protective of public health (considering the availability and economics of water treatment technology) over a lifetime of use. The Illinois Department of Public Health uses MCLs and other comparison values in evaluating private water supplies.

The concentration of detected VOCs in your well range from below the MCLs to just above (e.g. trichloroethylene). Please note that there is no significant difference between the before filter and after filter results. This indicates that the filter is inadequate or needs to be serviced.

Illinois Department of
Public Health

John K. Lumpkin, M.D., M.P.H. Director

4302 North Main Street • Rockford, Illinois 61103-209

May 10, 1995

Kent Dahlstrand
4463 Adale Street
Roscoe, Illinois 61073

Dear Mr. Dahlstrand:

This letter is written in reference to water samples taken from your home on April 4, 1995. These samples were sent to our toxicology laboratory in Springfield for analysis.

Your water sample was analyzed for chemicals called volatile organic compounds (VOCs). Of the compounds sampled for, the following were detected above detection limits (see attached).

1,1-Dichloroethylene	1.8	1.6	7 (MCL)
Cis 1,2-Dichloroethylene	5.7	2.5	70 (MCL)
1,1,1-Trichloroethane	15	26	200 (MCL)
1,1,2-Trichloroethane	5.1	ND	5 (MCL)
Trichloroethylene	18	ND	5 (MCL)
1,1 Dichloroethane	ND	0.6	28 (CDWG)

ppb - part per billion; (one part per billion is equivalent to one drop in 16,000 gallons of water)
ND - Not Detected
CDWG - California Drinking Water Guidelines

Currently, there are no standards for these compounds in private water supplies. However, standards for these compounds do exist for public water supplies. These standards are called Maximum Contaminant Levels (MCLs). MCLs represent contaminant concentrations that the U.S. Environmental Protection Agency deems protective of public health (considering the availability and economics of water treatment technology) over a lifetime of use. The Illinois Department of Public Health uses MCLs and other comparison values in evaluating private water supplies.

The concentration of detected VOCs in your filtered water sample are below the comparison values. However, please note that there are detectable amounts of these compounds which may indicate that the filter needs to be serviced.

APPENDIX B

PRELIMINARY RISK DATA

APPENDIX B

PRELIMINARY RISK DATA

Evergreen Manor Site

Address / Chemicals	Date of Sample	Units	Concentration	Screening [1] Level	COPC Flag	Rationale for Contaminat Deletion or Selection
11975 Blue Spruce	4/22/96					
TCE		PPB	22	1.6 C	Yes	ASL
1,1 DCE		PPB	1.1	0.044 C	Yes	ASL
1,1,1 TCA		PPB	11	54 N	No	BSL
Cis 1,2 DCE		PPB	4.4	6.1 N	No	BSL
1,1 DCA		PPB	1.1	80 N	No	BSL
12031 Blue Spruce	5/22/98					
TCE		PPB	13	1.6 C	Yes	ASL
PCE		PPB	1.5	1.1 C	Yes	ASL
1,1 DCE		PPB	0.65	0.044 C	Yes	ASL
1,1,1 TCA		PPB	3.8	54 N	No	BSL
Cis 1,2 DCE		PPB	3	6.1 N	No	BSL
1,1 DCA		PPB	0.62	80 N	No	BSL
11731 Balsa Lane	5/22/98					
TCE		PPB	0.51	1.6 C	No	BSL
11708 Balsa Lane	5/22/98					
TCE		PPB	0.91	1.6 C	No	BSL
11593 Wagon Lane	5/22/98					
TCE		PPB	18	1.6 C	Yes	ASL
1,1 DCE		PPB	1.6	0.044 C	Yes	ASL
Cis 1,2 DCE		PPB	2.2	6.1 N	No	BSL
1,1 DCA		PPB	1.1	80 N	No	BSL

(1) EPA Region III Risk-Based Concentrations (4/15/98).

Definitions:
ASL = Above Screening Levels.
BSL = Below Screening Levels.
C = Carcinogenic
N = Non-Carcinogenic
COPC = Chemical of Potential Concern

Address / Chemicals	Date of Sample	Units	Concentration	Screening (1) Level	COPC Flag	Rationale for Contaminat [2] Deletion or Selection
4295 Buggywhip Lan	5/22/98					
TCE		PPB	13.6	1.6 C	Yes	ASL
1,1 DCE		PPB	0.67	0.044 C	Yes	ASL
1,1,1 TCA		PPB	3.1	54 N	No	BSL
Cis 1,2 DCE		PPB	17	6.1 N	Yes	ASL
1,1 DCA		PPB	0.61	80 N	No	BSL
4175 Buggywhip Lan	4/22/96					
TCE		PPB	2	1.6 C	Yes	ASL
1,1 DCE		PPB	0.6	0.044 C	Yes	ASL
1,1,1 TCA		PPB	6.6	54 N	No	BSL
4463 Adele	5/22/98					
TCE		PPB	7.2	1.6 C	Yes	ASL
PCE		PPB	5.3	1.1 C	Yes	ASL
1,1 DCE		PPB	0.65	0.044 C	Yes	ASL
1,1,1 TCA		PPB	3.9	54 N	No	BSL
Cis 1,2 DCE		PPB	3.2	6.1 N	No	BSL
1,1 DCA		PPB	0.79	80 N	No	BSL
4427 Adele Street	5/22/98					
TCE		PPB	3.9	1.6 C	Yes	ASL
PCE		PPB	3.2	1.1 C	Yes	ASL
1,1 DCE		PPB	0.68	0.044 C	Yes	ASL
1,1,1 TCA		PPB	4.4	54 N	No	BSL
Cis 1,2 DCE		PPB	2	6.1 N	No	BSL
1,1 DCA		PPB	0.73	80 N	No	BSL

(1) EPA Region III Risk-Based Concentrations (4/15/98).

Definitions:
ASL = Above Screening Levels.
BSL = Below Screening Levels.
C = Carcinogenic
N = Non-Carcinogenic
COPC = Chemical of Potential Concern

Address / Chemicals	Date of Sample	Units	Concentration	Screening (1) Level	COPC Flag	Rationale for Contaminat [2] Deletion or Selection
4444 Hononegah Rd	5/22/98					
TCE		PPB	7	1.6 C	Yes	ASL
PCE		PPB	3.1	1.1 C	Yes	ASL
1,1 DCE		PPB	0.55	0.044 C	Yes	ASL
1,1,1 TCA		PPB	2.4	54 N	No	BSL
Cis 1,2 DCE		PPB	1.5	6.1 N	No	BSL
1,1 DCA		PPB	0.5	80 N	No	BSL
11412 Tanawingo	5/22/98					
TCE		PPB	1.2	1.6 C	No	BSL
1,1,1 TCA		PPB	0.56	54 N	No	BSL
4539 Mathew Ave	5/22/98					
TCE		PPB	7.5	1.6 C	Yes	ASL
PCE		PPB	5.1	1.1 C	Yes	ASL
1,1 DCE		PPB	0.6	0.044 C	Yes	ASL
1,1,1 TCA		PPB	3.5	54 N	No	BSL
Cis 1,2 DCE		PPB	3	6.1 N	No	BSL
1,1 DCA		PPB	0.76	80 N	No	BSL
4536 Mathew	5/22/98					
TCE		PPB	4.5	1.6 C	Yes	ASL
PCE		PPB	5	1.1 C	Yes	ASL
1,1 DCE		PPB	0.72	0.044 C	Yes	ASL
1,1,1 TCA		PPB	4.6	54 N	No	BSL
Cis 1,2 DCE		PPB	2.5	6.1 N	No	BSL
1,1 DCA		PPB	0.85	80 N	No	BSL

(1) EPA Region III Risk-Based Concentrations (4/15/98).

Definitions:
ASL = Above Screening Levels.
BSL = Below Screening Levels.
C = Carcinogenic
N = Non-Carcinogenic
COPC = Chemical of Potential Concern

Address	Chemical	HQ	Cancer Risk	HQ After Removal Action	Cancer Risk After Removal Action
11975 Blue Spruce					
Child					
	Pathway: Ingestion				
	TCE	0.2344	1.33E-06		
	1,1 DCE	0.0078	3.62E-06		
	Pathway:Dermal				
	TCE	0.099	5.60E-07	0.099	5.60E-07
	1,1 DCE	0.0001	5.91E-08	0.0001	5.91E-08
	Pathway:Inhalation				
	TCE	0.1843	5.69E-07	0.1843	5.69E-07
	1,1 DCE	0.0071	1.09E-06	0.0071	1.09E-06
	Total		**7.23E-06**		**2.28E-06**
Adult					
	Pathway: Ingestion				
	TCE	0.1005	2.27E-06		
	1,1 DCE	0.0033	6.20E-06		
	Pathway:Dermal				
	TCE	0.0527	1.19E-06	0.0527	1.19E-06
	1,1 DCE	0.0001	1.26E-07	0.0001	1.26E-07
	Pathway:Inhalation				
	TCE	0.079	9.75E-07	0.079	9.75E-07
	1,1 DCE	0.003	1.87E-06	0.003	1.87E-06
	Total		**1.26E-05**		**4.16E-06**
	Total HI for Noncarcinogen	**0.7713**		**0.4253**	

Address	Chemical	HQ	Cancer Risk	HQ After Removal Action	Cancer Risk After Removal Action
12031 Blue Spruce					
Child					
	Pathway: Ingestion				
	TCE	0.1385	7.86E-07		
	PCE	0.0096	4.27E-07		
	1,1 DCE	0.0046	2.14E-06		
	Pathway:Dermal				
	TCE	0.0585	3.31E-07	0.0585	3.31E-07
	PCE	0.0065	2.90E-07	0.0065	2.90E-07
	1,1 DCE	0.0001	3.49E-08	0.0001	3.49E-08
	Pathway:Inhalation				
	TCE	0.1089	3.36E-07	0.1089	3.36E-07
	PCE	0.0005	1.18E-08	0.0005	1.18E-08
	1,1 DCE	0.0042	6.44E-07	0.0042	6.44E-07
	Total		**5.00E-06**		**1.65E-06**
Adult					
	Pathway: Ingestion				
	TCE	0.0594	1.34E-06		
	PCE	0.0042	7.33E-07		
	1,1 DCE	0.0020	3.66E-06		
	Pathway:Dermal				
	TCE	0.0311	7.03E-07	0.0311	7.03E-07
	PCE	0.0035	6.18E-07	0.0035	6.18E-07
	1,1 DCE	0.0001	7.45E-08	0.0001	7.45E-08
	Pathway:Inhalation				
	TCE	0.0467	5.76E-07	0.0467	5.76E-07
	PCE	0.0002	2.02E-08	0.0002	2.02E-08
	1,1 DCE	0.0018	1.11E-06	0.0018	1.11E-06
	Total		**8.83E-06**		**3.10E-06**
	Total HI for Noncarcinogen	**0.4803**		**0.2620**	

Address	Chemical	HQ	Cancer Risk	HQ After Removal Action	Cancer Risk After Removal Action
11593 Wagon Lane					
Child					
	Pathway: Ingestion				
	TCE	0.1918	1.09E-06		
	1,1 DCE	0.0113	5.27E-06		
	Pathway:Dermal				
	TCE	0.081	4.58E-07	0.081	4.58E-07
	1,1 DCE	0.0001	8.60E-08	0.0001	8.60E-08
	Pathway:Inhalation				
	TCE	0.1508	4.66E-07	0.1508	4.66E-07
	1,1 DCE	0.0103	1.59E-06	0.0103	1.59E-06
	Total		**8.95E-06**		**2.60E-06**
Adult					
	Pathway: Ingestion				
	TCE	0.0822	1.86E-06		
	1,1 DCE	0.0048	9.02E-06		
	Pathway:Dermal				
	TCE	0.0431	9.74E-07	0.0431	9.74E-07
	1,1 DCE	0.0001	1.83E-07	0.0001	1.83E-07
	Pathway:Inhalation				
	TCE	0.0646	7.98E-07	0.0646	7.98E-07
	1,1 DCE	0.0044	2.72E-06	0.0044	2.72E-06
	Total		**1.56E-05**		**4.67E-06**
	Total HI for Noncarcinogen	**0.6447**		**0.3545**	

Address	Chemical	HQ	Cancer Risk	HQ After Removal Action	Cancer Risk After Removal Action
4295 Buggywhip Lane					
Child					
	Pathway: Ingestion				
	TCE	0.1449	8.22E-07		
	1,1 DCE	0.0048	2.20E-06		
	Cis 1,2 DCE	0.1087			
	Pathway:Dermal				
	TCE	0.0612	3.46E-07	0.0612	3.46E-07
	1,1 DCE	0.0001	3.60E-08	0.0001	3.60E-08
	Cis 1,2 DCE	0.002		0.002	
	Pathway:Inhalation				
	TCE	0.1139	3.52E-07	0.1139	3.52E-07
	1,1 DCE	0.0043	6.64E-07	0.0043	6.64E-07
	Cis 1,2 DCE	0.0945		0.0945	
	Total		**4.42E-06**		**1.40E-06**
Adult					
	Pathway: Ingestion				
	TCE	0.0621	1.40E-06		
	1,1 DCE	0.0020	3.78E-06		
	Cis 1,2 DCE	0.0466			
	Pathway:Dermal				
	TCE	0.0326	7.36E-07	0.0326	7.36E-07
	1,1 DCE	0.0001	7.67E-08	0.0001	7.67E-08
	Cis 1,2 DCE	0.0011		0.0011	
	Pathway:Inhalation				
	TCE	0.0488	6.03E-07	0.0488	6.03E-07
	1,1 DCE	0.0018	1.14E-06	0.0018	1.14E-06
	Cis 1,2 DCE	0.0405		0.0405	
	Total		**7.73E-06**		**2.55E-06**
	Total HI for Noncarcinogen	**0.7700**		**0.4009**	

Address	Chemical	HQ	Cancer Risk	HQ After Removal Action	Cancer Risk After Removal Action
4175 Buggywhip Lane					
Child					
	Pathway: Ingestion				
	TCE	0.0213	1.21E-07		
	1,1 DCE	0.0043	1.97E-06		
	Pathway:Dermal				
	TCE	0.0090	5.09E-08	0.0090	5.09E-08
	1,1 DCE	0.0001	3.22E-08	0.0001	3.22E-08
	Pathway:Inhalation				
	TCE	0.0168	5.17E-08	0.0168	5.17E-08
	1,1 DCE	0.0039	5.95E-07	0.0039	5.95E-07
	Total		**2.82E-06**		**7.29E-07**
Adult					
	Pathway: Ingestion				
	TCE	0.0091	2.06E-07		
	1,1 DCE	0.0018	3.38E-06		
	Pathway:Dermal				
	TCE	0.0048	1.08E-07	0.0048	1.08E-07
	1,1 DCE	0.0001	6.87E-08	0.0001	6.87E-08
	Pathway:Inhalation				
	TCE	0.0072	8.86E-08	0.0072	8.86E-08
	1,1 DCE	0.0016	1.02E-06	0.0016	1.02E-06
	Total		**4.87E-06**		**1.29E-06**
	Total HI for Noncarcinogen	**0.0798**		**0.0433**	

Address	Chemical	HQ	Cancer Risk	HQ After Removal Action	Cancer Risk After Removal Action
4463 Adele					
Child					
	Pathway: Ingestion				
	TCE	0.0767	4.35E-07		
	PCE	0.0339	1.51E-06		
	1,1 DCE	0.0046	2.14E-06		
	Pathway:Dermal				
	TCE	0.0324	1.83E-07	0.0324	1.83E-07
	PCE	0.0230	1.02E-06	0.0230	1.02E-06
	1,1 DCE	0.0001	3.49E-08	0.0001	3.49E-08
	Pathway:Inhalation				
	TCE	0.0603	1.86E-07	0.0603	1.86E-07
	PCE	0.0018	4.17E-08	0.0018	4.17E-08
	1,1 DCE	0.0042	6.44E-07	0.0042	6.44E-07
	Total		**6.20E-06**		**2.11E-06**
Adult					
	Pathway: Ingestion				
	TCE	0.0329	7.43E-07		
	PCE	0.0148	2.59E-06		
	1,1 DCE	0.0020	3.66E-06		
	Pathway:Dermal				
	TCE	0.0172	3.89E-07	0.0172	3.89E-07
	PCE	0.0124	2.18E-06	0.0124	2.18E-06
	1,1 DCE	0.0001	7.45E-08	0.0001	7.45E-08
	Pathway:Inhalation				
	TCE	0.0259	3.19E-07	0.0259	3.19E-07
	PCE	0.0007	7.14E-08	0.0007	7.14E-08
	1,1 DCE	0.0018	1.11E-06	0.0018	1.11E-06
	Total		**1.11E-05**		**4.14E-06**
	Total HI for Noncarcinogen	**0.3446**		**0.1797**	

Address	Chemical	HQ	Cancer Risk	HQ After Removal Action	Cancer Risk After Removal Action
4427 Adele Street					
Child					
	Pathway: Ingestion				
	TCE	0.0416	2.36E-07		
	PCE	0.0205	9.11E-07		
	1,1 DCE	0.0048	2.24E-06		
	Pathway:Dermal				
	TCE	0.0176	9.93E-08	0.0176	9.93E-08
	PCE	0.0139	6.19E-07	0.0139	6.19E-07
	1,1 DCE	0.0001	3.65E-08	0.0001	3.65E-08
	Pathway:Inhalation				
	TCE	0.0327	1.01E-07	0.0327	1.01E-07
	PCE	0.0011	2.52E-08	0.0011	2.52E-08
	1,1 DCE	0.0044	6.74E-07	0.0044	6.74E-07
	Total		**4.94E-06**		**1.55E-06**
Adult					
	Pathway: Ingestion				
	TCE	0.0178	4.02E-07		
	PCE	0.0090	1.56E-06		
	1,1 DCE	0.0020	3.83E-06		
	Pathway:Dermal				
	TCE	0.0093	2.11E-07	0.0093	2.11E-07
	PCE	0.0075	1.32E-06	0.0075	1.32E-06
	1,1 DCE	0.0001	7.79E-08	0.0001	7.79E-08
	Pathway:Inhalation				
	TCE	0.0140	1.73E-07	0.0140	1.73E-07
	PCE	0.0004	4.31E-08	0.0004	4.31E-08
	1,1 DCE	0.0019	1.16E-06	0.0019	1.16E-06
	Total		**8.78E-06**		**2.98E-06**
	Total HI for Noncarcinogen	**0.1984**		**0.1028**	

Address	Chemical	HQ	Cancer Risk	HQ After Removal Action	Cancer Risk After Removal Action
4444 Hononegah Rd					
Child					
	Pathway: Ingestion				
	TCE	0.0746	4.23E-07		
	PCE	0.0198	8.82E-07		
	1,1 DCE	0.0039	1.81E-06		
	Pathway:Dermal				
	TCE	0.0315	1.78E-07	0.0315	1.78E-07
	PCE	0.0134	5.99E-07	0.0134	5.99E-07
	1,1 DCE	0.0001	2.96E-08	0.0001	2.96E-08
	Pathway:Inhalation				
	TCE	0.0586	1.81E-07	0.0586	1.81E-07
	PCE	0.0010	2.44E-08	0.0010	2.44E-08
	1,1 DCE	0.0036	5.45E-07	0.0036	5.45E-07
	Total		**4.67E-06**		**1.56E-06**
Adult					
	Pathway: Ingestion				
	TCE	0.0320	7.22E-07		
	PCE	0.0087	1.51E-06		
	1,1 DCE	0.0017	3.10E-06		
	Pathway:Dermal				
	TCE	0.0168	3.79E-07	0.0168	3.79E-07
	PCE	0.0072	1.28E-06	0.0072	1.28E-06
	1,1 DCE	0.0001	6.30E-08	0.0001	6.30E-08
	Pathway:Inhalation				
	TCE	0.0251	3.10E-07	0.0251	3.10E-07
	PCE	0.0004	4.17E-08	0.0004	4.17E-08
	1,1 DCE	0.0015	9.35E-07	0.0015	9.35E-07
	Total		**8.34E-06**		**3.01E-06**
	Total HI for Noncarcinogen	**0.2999**		**0.1593**	

Address	Chemical	HQ	Cancer Risk	HQ After Removal Action	Cancer Risk After Removal Action
4539 Mathew Ave					
Child					
	Pathway: Ingestion				
	TCE	0.0799	4.53E-07		
	PCE	0.0326	1.45E-06		
	1,1 DCE	0.0043	1.97E-06		
	Pathway:Dermal				
	TCE	0.0338	1.91E-07	0.0338	1.91E-07
	PCE	0.0221	9.86E-07	0.0221	9.86E-07
	1,1 DCE	0.0001	3.22E-08	0.0001	3.22E-08
	Pathway:Inhalation				
	TCE	0.0628	1.94E-07	0.0628	1.94E-07
	PCE	0.0017	4.01E-08	0.0017	4.01E-08
	1,1 DCE	0.0039	5.95E-07	0.0039	5.95E-07
	Total		**5.92E-06**		**2.04E-06**
Adult					
	Pathway: Ingestion				
	TCE	0.0343	7.74E-07		
	PCE	0.0143	2.49E-06		
	1,1 DCE	0.0018	3.38E-06		
	Pathway:Dermal				
	TCE	0.0180	4.06E-07	0.0180	4.06E-07
	PCE	0.0119	2.10E-06	0.0119	2.10E-06
	1,1 DCE	0.0001	6.87E-08	0.0001	6.87E-08
	Pathway:Inhalation				
	TCE	0.0269	3.32E-07	0.0269	3.32E-07
	PCE	0.0007	6.87E-08	0.0007	6.87E-08
	1,1 DCE	0.0016	1.02E-06	0.0016	1.02E-06
	Total		**1.06E-05**		**4.00E-06**
	Total HI for Noncarcinogen	**0.3506**		**0.1835**	

Address	Chemical	HQ	Cancer Risk	HQ After Removal Action	Cancer Risk After Removal Action
4536 Mathew					
Child					
	Pathway: Ingestion				
	TCE	0.0479	2.72E-07		
	PCE	0.0320	1.42E-06		
	1,1 DCE	0.0051	2.37E-06		
	Pathway:Dermal				
	TCE	0.0203	1.15E-07	0.0203	1.15E-07
	PCE	0.0217	9.67E-07	0.0217	9.67E-07
	1,1 DCE	0.0001	3.87E-08	0.0001	3.87E-08
	Pathway:Inhalation				
	TCE	0.0377	1.16E-07	0.0377	1.16E-07
	PCE	0.0017	3.93E-08	0.0017	3.93E-08
	1,1 DCE	0.0046	7.13E-07	0.0046	7.13E-07
	Total		**6.05E-06**		**1.99E-06**
Adult					
	Pathway: Ingestion				
	TCE	0.0206	4.64E-07		
	PCE	0.0140	2.44E-06		
	1,1 DCE	0.0022	4.06E-06		
	Pathway:Dermal				
	TCE	0.0108	2.43E-07	0.0108	2.43E-07
	PCE	0.0117	2.06E-06	0.0117	2.06E-06
	1,1 DCE	0.0001	8.25E-08	0.0001	8.25E-08
	Pathway:Inhalation				
	TCE	0.0162	1.99E-07	0.0162	1.99E-07
	PCE	0.0007	6.73E-08	0.0007	6.73E-08
	1,1 DCE	0.0020	1.22E-06	0.0020	1.22E-06
	Total		**1.08E-05**		**3.88E-06**
	Total HI for Noncarcinogen	**0.2491**		**0.1273**	

APPENDIX C

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 *Mary A. Gade, Director*

217/785-9407

October 2, 1998

Mr. Mike Ribordy
Remedial Response Section 2
Division of Superfund, SR-6J
USEPA, Region V
77 West Jackson Blvd.
Chicago, Illinois 60604

RE: 2010400015 Winnebago County
Evergreen Manor Groundwater Contamination Site
Superfund/Technical Reports

Dear Mr. Ribordy:

Thank you for your August 27, 1998 letter regarding the Evergreen Manor Site. The letter identified the U.S. EPA's recommended removal action alternative for the site. The action consists of placement of "point of use" drinking water filters on residential drinking water wells with contaminant concentrations exceeding Maximum Contaminant Levels ("MCLs"). The letter also explored Illinois Environmental Protection Agency's (Illinois EPA's) willingness to participate in the removal action by providing funding for Operation and Maintenance ("O&M") at the site. U.S. EPA estimated that the costs for two (2) years of O&M would be approximately $57,223. These costs are based on the assumption that three (3) years of filtration would be all that is required until contaminant levels within the groundwater drop below MCLs. Illinois EPA feels that the cost estimates for the two (2) years of O&M are valid. However, there is concern that some private wells may still have groundwater contaminant concentrations above MCLs after three (3) years, and therefore require additional O&M. The costs of additional rounds of analysis and additional filter replacement could rise near to $100,000 after several years.

As you are aware, the State views this site as a priority with an express interest in providing the residents with a safe supply of drinking water. Additionally, the State has already expended over $257,000 investigating the extent of groundwater contamination and identifying Potentially Responsible Parties (PRPs) at the site. Currently, the State cannot commit to O&M for an undetermined amount of money for an unlimited time frame. However, the State is supportive of the U.S. EPA's action and willing to committ the resources necessary to cover the costs of two (2) years of O&M for the recommended alternative.

If you have any questions regarding this matter, please contact me.

Respectfully,

William C Child

William C. Child, Chief
Bureau of Land

bureau/omresplt

cc: Beth Wallace, IAGO Chicago

APPENDIX D.1

POINT OF ENTRY FILTER COST DOCUMENTS

HEADQUARTERS: [illegible] ST. • P.O. BOX 190 • VANDALIA, MI 49095
[illegible] • 1-800-833-5553 • FAX 616-476-2251
[illegible]

ENVIRONMENTAL REMEDIATION SPECIALISTS

- Sales or Rental Equipment
- Residential Carbon Filters
- Airstrippers
- Carbon Change Out Services
- Liquid & Vapor Phase Carbon Filters
- Sand, Clay & Bag Filters
- Clarifiers
- Filter Presses

PROPOSAL EPA#9820095

July 30, 1998

Mr. Mike Ribordy
United States Environmental Protection Agency
77 W. Jackson Blvd.
Chicago, IL 60604

Job Site: Evergreen Manor
Site Specific Information: Point of entry filters

QTY	DESCRIPTION	UNIT	PRICE
1	WHS-400 Filtration system consist of:	$ 1,650.00	$ 1650.00
	■ 2 13" x 58" Fiberglass vessels containing 110 lbs virgin carbon, ■ Training, manual & Prefilter assembly		
	Change Out Pricing		
1	Wholehouse change out (1 unit/position)	$ 595.00	$ 595.00
1	Regeneration of spent carbon (non-hazardous)	$ 50.00	$ 50.00

Note: Installation cost range from $300.00 to $[illegible] dependent upon plumbing configurations. At the time of change out the spent carbon will need to have a TCLP test performed this cost is $250.00, and would be effective for a 2 year period of time. Regeneration for non-hazardous carbon would be $50.00 per change out (1/2 drum). Mobilization fee will be determined upon quantity of order.

Terms: 2%/10, Net 30 days. A 1.75% service charge will be applied to all unpaid balances over 30 days; 21% per annum.

If you have any questions, please feel free to contact me at 1-800-833-5553.

Sincerely,
North American Aqua, Inc.

Kathy

Kathy L. Bradley
Sales Assistant

NORTH AMERICAN AQUA, INC.
[redacted] State Street
P.O. Box 130
Vandalia, MI 49095
1-800-833-5553

NORTH AMERICAN AQUA WHS-200EPA/WHS-400EPA
"THE SYSTEMS CHOSEN BY THE U.S. EPA"

Drinking and Bathing Water Filtration

Applications:
Point of entry filtration unit for the treatment of private and commercial water for drinking and bathing.

The water filtration system uses a high-tech virgin granular activated carbon chosen for its high performance capabilities in absorbing the most dangerous and worrisome volatile organic chemicals that may be present in private well water supplies.

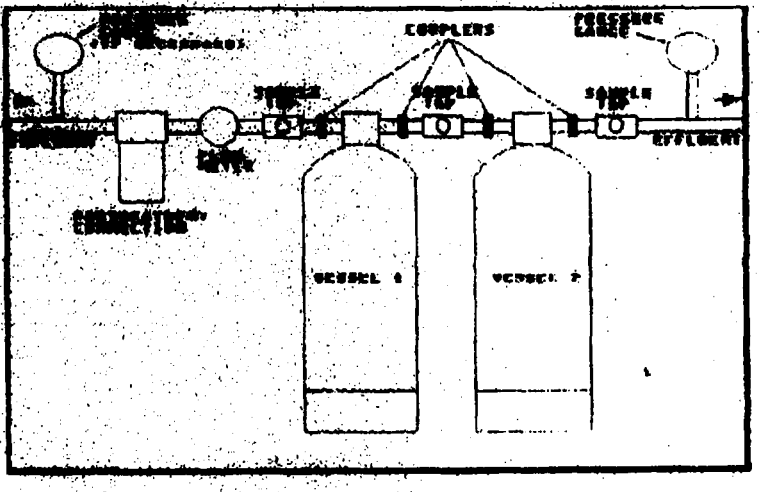
Each system features:

- 2 NSF fiberglass pressure rated reinforced vessels.
- Pressure controlled operation from 0-125 psi.
- A pre-filter assembly (50 microns) for the removal of sand and particulate matter.
- A totalizing meter to monitor usage.
- Sample ports to monitor performance.
- Adapts to any type of plumbing configuration.

The filtration system design allows contact time on the filter media to be effective on large concentrations of dangerous organic chemicals up to 10 gallons per minute, which is more than sufficient to support the needs of an average household. The system's design includes a safety buffer which is extremely critical when addressing water for human consumption.

The two-stage filtration system is placed at the well head receiving untreated water which flows through the first bed of granular activated carbon eliminating up to 100% of the contamination. The water is then discharged through a second bed of granular activated carbon which acts as a polishing agent and safety buffer ensuring the total effectiveness of the entire system. For instance, if contaminant breakthrough should occur at the first vessel at 100,000 gallons of usage, then it can be anticipated that the second vessel will allow another 100,000 gallons of usage if maintenance should for some reason be delayed.

If an aquifer's contaminant level is known, North American Aqua's engineers can predict breakthrough by gallon usage.



[redacted] American Aqua's expertise. We can provide [redacted] anywhere in the Region 5 [redacted] in the United States.

NORTH AMERICAN AQUA, INC.
18008 State St.
Vandalia, MI 49095

WHS-400EPA

System Description

North American Aqua's two vessel activated carbon adsorption system consists of two 13 x 54 inch vessels designed to provide 11 minutes of contact time based on an average household use of seven gallons per minute. This system is accompanied with a fifty micron pre-filter assembly to remove sediment and a totalizing meter to monitor gallon usage (see attached specifications). All components of this system have an NSF rating, in fact, the entire system has recently went through a multiple series of tests and evaluation by the NSF under contract by PEI Associates, Inc. of Cincinnati, Ohio for the United States Environmental Protection Agency. The system was tested with the pre-filter in place and without a flow restrictor. The results of that test program will be available soon.

The vessels in this system are arranged in series with quick couplers which allows for easy change-out of the lead unit and movement of the second vessel to the first position at the estimated time of break through. The system has no by pass there-by preventing any accidental use of contaminated water. Each vessel contains 110 lbs. of special coal based granular activated virgin 20 x 50 mesh size carbon. This carbon is selected for its high adsorption capacity on organic concentrations in water supplies (see attachments).

Along with the pre-filter and totalizing meter, the system includes pressure gauges to monitor pressure drop across the system. Additionally, the system includes sample taps located to permit sampling of influent, interim (between vessels) and treated water (effluent). The installation point (in the residents water system) of the vessels will be determined in the field on a house to house basis. Generally, the system is located at the well head prior to softeners and conditioning units. The systems are always upstream of all water taps or other consumer use connections in each residence.

The units are installed by licensed plumbers. All plumbing will be in accordance with all applicable plumbing codes, state and local laws regarding plumbing procedures and installation of filtration devices.

System Operation

The vessels will be operated in series. The lead vessel will be the gross removal unit with the second safety vessel acting as a polishing unit. As an operating parameter considering the extrapolation of isotherm tests on the average organic contaminants in the ground water, we conservatively predict the lead vessel will be depleted at 100,000 gallons or one year from start up. In the long term operation of the system, change out will be based on the gallons of water treated if the objective of 100,000 gallons is met before year end. This will be equated to (approximate) sample concentrations through sampling lines as is described below.

At 100,000 gallons or at break through, which ever occurs first, the lead vessel will be removed for regeneration and replaced with a vessel of fresh carbon. This vessel of fresh carbon will be placed as the secondary vessel and the original "safety" polishing vessel will be placed in the first position. This ensures the residual a safety buffer of 100,000 gallons of usage on the undepleted fresh carbon. A one-tank filter change is done on annual basis because of chances of bacterial growth.

Also, included in the change outs will be the 50 micron pre-filter. Our experience shows that it is necessary to change this filter every six months or less, depending upon water conditions, to ensure maximum performance of the total system. The totalizing meter is read when the pre-filter changes are done every six months to record gallon usage, so as not to exceed 100,000 gallons of water.

System Monitoring

Monitoring of the system shall include recording flow rate (through the units), sampling of the inlet (influent), and interim (after first vessel). Final treated water (through both vessels) will be sampled if break through should occur prematurely at the first vessel. Please note, concentrations of organics in the influent found to be higher than in the original sampling may alter performance expectations there-by causing a possible alteration of the monitoring and the change out program. However, because of conservative estimates on carbon usage, this might not become a factor unless there is a drastic increase in organics.

Periodic testing of the system for bacterial growth, by a certified laboratory, is highly recommended. This should be done annually unless the location is in low lying areas with high aquifers, possible nearby septic systems, etc., then more frequent testing is necessary. If bacteria is found, a simple solution such as ultra-violet treatment could be utilized. Also please note that the number of gallons the system is designed to treat varies on the contaminant and its concentration.

Addressing Spent Carbon

It is the policy of North American Aqua, Inc. that all spent carbon be regenerated by qualified professionals only. We have arrangements with companies licensed for this service. At the time of changeouts, North American Aqua collects and ships spent carbon to facilities where it is then cleaned by incineration.

Addressing Iron and Calcium

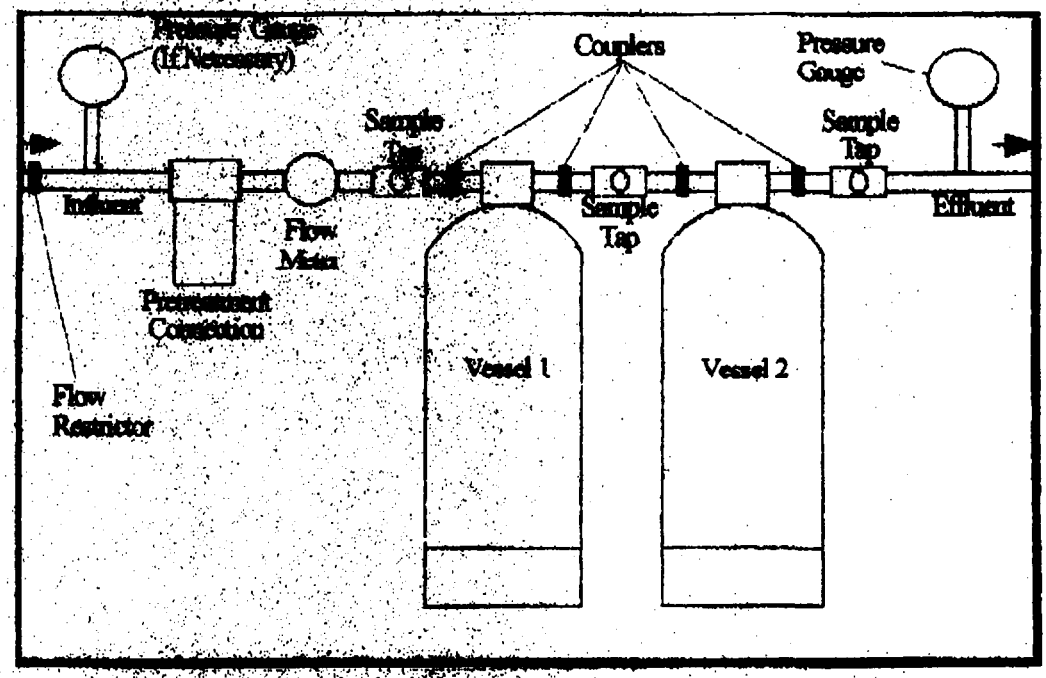
In areas experiencing extremely high iron and calcium content in the water supply, with analytical data our engineers can recommend a pre-treatment system that best suits your needs, such as iron removal filters, etc..

In areas with minimum iron and calcium problems, our 50 micron pleated polyester pre-filter works extremely well in collecting iron residues.

Pre-Filter Data

* 50 pleats (674 sq. in. filtration area)
* 50 micron nominal filtration
* 9 3/4" long, 2 1/2" O.D.
* 5 gpm flow rate with 2 psi drop
  (40 lbs. inlet pressure)

RECOMMENDED INSTALLATION SCENARIO



INSTALLATION INSTRUCTIONS

Note To Plumbers and Users

1. System should be located upstream of all household outlets.
2. The flow restrictor should be located before all system components.
3. The system must be equipped with a cable strap (electrical bonding jumper) to prevent electrical shock or fire hazard.
4. Do not expose system to freezing conditions.
5. Install on a level surface.
6. Make sure inlets & outlets are in line.
7. Use quick couplers inlet & outlet on large tanks.
8. Do not use lead solder.
9. Do not solder pipe directly connected to head.
10. Do not use where water is microbiologically unsafe or with water of unknown quality without adequate disinfection before or after the unit.

NOTE: All plumbing will be in accordance with all applicable plumbing codes. State and local laws regarding plumbing procedures and installation of filtration devices.

APPENDIX D.2

POINT OF USE FILTER COST DOCUMENTS

[redacted] - P.O. BOX 130 • VANDALIA, MI 49095
[redacted] • 1-800-833-5553 • FAX 616-476-2251
[redacted]

ENVIRONMENTAL REMEDIATION SPECIALISTS

- Sales or Rental Equipment
- Residential Carbon Filters
- Shredders
- Carbon Change Out Services
- Liquid & Vapor Phase Carbon Filters
- Sand, Clay & Bag Filters
- Clarifiers
- Filter Presses

PROPOSAL EPA#9820089

Mr. Ken Theisen
United States Environmental Protection Agency
77 W. Jackson Blvd.
Chicago, IL 60604

July 27, 1998

Job Site: Evergreen Manor
Site Specific Information: POU Filters

QTY	DESCRIPTION	UNIT	PRICE
24	Point of use filters	$ 350.00	$ 8,400.00
24	Freight to Rockton, IL	$ 4.65	$ 111.60
	Replacement Filters		
24	CBC-10 Replacement Filters	$ 14.25	$ 342.00
24	CC-10 Replacement Filters	$ 11.00	$ 264.00
24	Freight to Rockton, IL	$ 3.38	$ 81.12
	Change Out Pricing		
24	POU Change Outs (Includes filters)	$ 90.00	$ 2,160.00
1	Mob/Demob	$ 225.00	$ 225.00
1	Per Diem	$ 80.00	$ 80.00

Terms: 2%/10, Net 30 days. A 1.75% service charge will be applied to all unpaid balances over 30 days; 21% per annum.

If you have any questions, please feel free to contact us at 1-800-833-5553.

Sincerely,
North American Aqua, Inc.

Kathy

Kathy L. Bradley
Sales Assistant